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Europäisches  
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Generaldirektion 2

Directorate General 2

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Giver, Sören Bo  
Awapatent AB,  
P.O. Box 5117  
200 71 Malmö  
SUEDE

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1999 -12- 07

AWAPATENT, Malmö

Datum/Date

2. 12. 99

ichen/Ref./Réf.

2980609

Anmeldung Nr./Application No./Demande n°/Patent Nr./Patent No./Brevet n°.

98106535.2-2303/0855482

Anmelder/Applicant/Demandeur/Patentinhaber/Proprietor/Titulaire

Välinge Aluminium AB

**TRANSMISSION OF THE CERTIFICATE FOR A EUROPEAN PATENT  
PURSUANT TO RULE 54 (1) EPC**

The certificate for a European patent, with the  
specification annexed thereto, is enclosed herewith.

G. TERNIEDEN  
Formalities Officer  
Tel.No.: (+49-89) 2399-4440





**Europäisches  
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## Urkunde      Certificate      Certificat

Es wird hiermit bescheinigt, daß für die in der beigefügten Patentschrift beschriebene Erfindung ein europäisches Patent für die in der Patentschrift bezeichneten Vertragsstaaten erteilt worden ist.

It is hereby certified that a European patent has been granted in respect of the invention described in the annexed patent specification for the Contracting States designated in the specification.

Il est certifié qu'un brevet européen a été délivré pour l'invention décrite dans le fascicule de brevet ci-joint, pour les Etats contractants désignés dans le fascicule de brevet.

**Europäisches Patent Nr.**

**European Patent No.**

**Brevet européen n°**

**0855482**

**Patentinhaber**

**Proprietor of the Patent**

**Titulaire du brevet**

**Välinge Aluminium AB  
Kyrkogränd 1  
260 40 Viken/SE**

München, den  
Munich,  
Fait à Munich, le

**01.12.99**

EPA/EPO/OEB Form 2031 01.96

**Ingo Kober**

Präsident des Europäischen Patentamts  
President of the European Patent Office  
Président de l'Office européen des brevets



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Awapatent AB,  
P.O. Box 5117  
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Datum/Date

21/10/99

Anmeldung Nr./Application No./Demande n°/Patent Nr./Patent No./Brevet n°.	2980609
Anmelder/Applicant/Demandeur/Patentinhaber/Proprietor/Titulaire	Välinge Aluminium AB

# DECISION TO GRANT A EUROPEAN PATENT PURSUANT TO ARTICLE 97(2) EPC

Following examination of European patent application No. 98106535.2 a European patent with the title and the supporting documents indicated in the communication pursuant to Rule 51(4) EPC dated 11.08.99 is hereby granted in respect of the designated Contracting States. Any modifications which were subsequently requested have been approved by the Examining Division. Any corrections requested by the applicant a f t e r receipt of the communication under Rule 51(6) and received at the EPO on 00.00.00 have been taken into account.

Patent No. : 0855482  
Date of filing : 29.04.94  
Priority claimed : 10.05.93/SE 9301595  
Designated Contracting States and Proprietor(s) : AT-BE-CH-DE-DK-ES-FR-GB-GR-IE-IT-LI-LU-MC-NL-PT-SE  
Välinge Aluminium AB  
Kyrkogrand 1  
260 40 Viken/SE

This decision will take effect on the date on which the European Patent Bulletin mentions the grant (Art. 97(4) and (5) EPC).

The mention of the grant will be published in European Patent Bulletin 99/48 of 01.12.99.

Examining Division  
DALL'ANESE D D

PAPADIMITRIOU S E

PLUGGE H B



Registered letter



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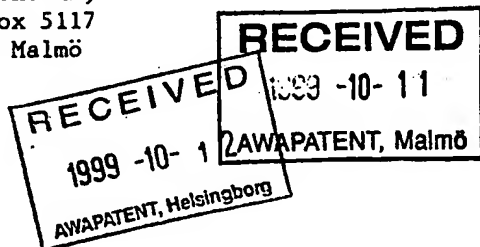
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Awapatent AB,  
P.O. Box 5117  
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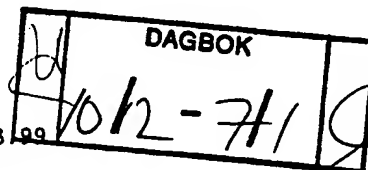


Datum/Date

07.10.99

n/Ref./Réf.	Anmeldung Nr./Application No./Demande n°/Patent Nr./Patent No./Brevet n°.
2980609	98106535.2-2303/
nmelder/Applicant/Demandeur/Patentinhaber/Proprietor/Titulaire Välinge Aluminium AB	

COMMUNICATION UNDER RULE 51(6) EPC



Further to the communication under Rule 51(4) dated 11.08.99

your approval of the text to be used as the basis for grant has been duly received.

Insofar as you have not already fulfilled the requirements mentioned below, you are now requested within a non-extendable period of three months from notification of this communication

1. to file in duplicate translations of the claim(s) in the two other EPO official languages *(already received on 18-9-99)*

	EUR	SEK
2a. to pay the fee for grant including the fee for printing up to and including 35 pages; Reference 007 .....	715.00	6440.00
2b. to pay the printing fee for the 36th and each additional page; Number of pages: 0 Reference 008 .....	0.00	0.00
3. to pay the additional claims fee(s) (Rule 51(7) EPC); Number of claims fees payable: 0 Reference 016 .....	0.00	0.00
Total amount .....	715.00	6440.00

REGISTERED LETTER





If the equivalents are given in other currencies, then these come under the provision of possible changes in accordance with Art. 6(4) of the Rules Relating to Fees. Such changes will be published in the Official Journal.

For all payments you are requested to use EPO Form 1010 or to refer to the relevant reference number.

If additional copies of the patent specification are required, you should request this in writing and quote Fee reference code 0 5 8 when making payment.

If the grant, printing or claims fees are not paid or the translations not filed in due time, the European patent application will be deemed to be withdrawn (Rule 51(8) EPC).

#### Note on payment of renewal fees

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If a renewal fee falls due between notification of the present communication and the proposed date of publication of the mention of the grant of the European patent, publication will be effected only after the renewal fee and any additional fee has been paid (Rule 51(9) EPC).

Under article 86(4) EPC, renewal fees are payable to the European Patent Office until the year in which the mention of the grant of the European patent is published.

#### Filing of translations in the Contracting States

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Pursuant to Article 65(1) EPC the following designated Contracting States require a translation of the specification of the European patent in their/one of their official language(s) (Rule 51(10) EPC), i n s o f a r this specification will not be published in their/one of their official language(s)

- within t h r e e months of publication of the mention of such decision:

AT AUSTRIA  
BE BELGIUM  
CH SWITZERLAND/LIECHTENSTEIN  
DE GERMANY  
DK DENMARK  
ES SPAIN  
FR FRANCE  
GB UNITED KINGDOM  
GR GREECE



IT ITALY  
NL NETHERLANDS  
PT PORTUGAL  
SE SWEDEN

- within s i x months of publication of the mention of such decision:

IE IRELAND

The date on which the European Patent Bulletin publishes the mention of the grant of the European patent will be indicated in the decision on the grant of the European patent (EPO Form 2006).

In case of a valid extension  
the following Extension States require a translation of the CLAIMS in their official language within t h r e e months after publication of the mention of the grant of the European patent:

AL ALBANIA  
LT LITHUANIA  
LV LATVIA  
MK MACEDONIA  
RO ROMANIA (requires translation of the specification)  
SI SLOVENIA

The translation must be filed with the national Patent Offices of the Contracting or Extension States in accordance with the provisions applying thereto in the State concerned. Further details (e. g. appointment of a national representative or indication of an address for service within the country) are given in the EPO information brochure "National law relating to the EPC", edition January 1997, and in the supplementary information published in the Official Journal of the EPO.

Failure to supply such translation to the Contracting and Extension States in time and in accordance with the requirements may result in the patent being deemed to be void ab initio in the State concerned.

Note to users of the automatic debiting procedure:

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Unless the EPO receives prior instructions to the contrary, the fee(s) will be debited on the last day of the period for payment. For further details see the Arrangements for the automatic debiting procedure, Supplement to OJ EPO 06/1994.

For the Examining Division:

IDE F G C

Tel. No.: (+49-89) 2399-2449  
2876

[ ] The text notified under Rule 51(4) EPC has been amended by the Ex-



aming Division as requested by the applicant.  
Copies of the amended pages are annexed.

- [ ] The text notified under Rule 51(4) EPC has been amended using the replacement pages filed by the applicant.
- [ ] Form 2530 relating to filing a translation of the previous application is dispatched by the same post.

Anmeldung Nr./Application No./Demande n°./Patent Nr./Patent No./Brevet n°.	Blatt/Page/Feuille
98106535.2	4

A METHOD FOR LAYING AND MECHANICALLY JOINING BUILDING  
PANELS AND A METHOD FOR PRODUCING A FLOOR

Technical Field

The invention generally relates to a <sup>method of laying,</sup> ~~system for pro-~~  
~~viding a joint along adjacent joint edges of~~ two building  
panels, especially floor panels.

5 ~~More specifically,~~ <sup>between the panels to be laid,</sup> the joint ~~is~~ of the type where  
the adjacent joint edges together form a first mechanical  
connection locking the joint edges to each other in  
a first direction at right angles to the principal plane  
of the panels, and where a locking device forms a second  
10 mechanical connection locking the panels to each other in  
a second direction parallel to the principal plane and at  
right angles to the joint edges, the locking device com-  
prising a locking groove which extends parallel to and  
spaced from the joint edge of one of the panels, and said  
15 locking groove being open at the rear side of this one  
panel.

The invention is especially well suited for use in  
joining floor panels, especially thin laminated floors.  
Thus, the following description of the prior art and of  
20 the objects and features of the invention will be focused  
on this field of use. It should however be emphasised  
that the invention is useful also for joining ordinary  
wooden floors as well as other types of building panels,  
such as wall panels and roof slabs.

25 Background of the Invention

A joint of the aforementioned type is known e.g.  
from SE 450,141. The first mechanical connection is  
achieved by means of joint edges having tongues and  
grooves. The locking device for the second mechanical  
30 connection comprises two oblique locking grooves, one in  
the rear side of each panel, and a plurality of spaced-

nection with laying, since the clips urge the panels tightly against each other.

- Floor laying using clips is time-consuming.
- This technique is usable only in those cases where  
5 the floor panels are resting on underlying joists with the clips placed therebetween. For thin floors to be laid on a continuous, flat supporting structure, such clips cannot be used.
- The floor panels can be joined together only at  
10 their long sides. No clip connection is provided on the short sides.

#### Technical Problems and Objects of the Invention

A main object of the invention therefore is to provide a <sup>method</sup> ~~system~~ for joining together building panels, especially floor panels for hard, floating floors, which allows using floor panels of a smaller overall thickness than present-day floor panels.

A particular object of the invention is to provide a panel-joining system which

- 20 - makes it possible in a simple, cheap and rational way to provide a joint between floor panels without requiring the use of glue, especially a joint based primarily only on mechanical connections between the panels;
- 25 - can be used for joining floor panels which have a smaller thickness than present-day laminated floors and which have, because of the use of a different core material, superior properties than present-day floors even at a thickness of 3 mm;
- 30 - makes it possible between thin floor panels to provide a joint that eliminates any unevennesses in the joint because of thickness tolerances of the panels;
- allows joining all the edges of the panels;
- reduces tool wear when manufacturing floor panels  
35 with hard surface layers;

- allows repeated disassembly and reassembly of a floor previously laid, without causing damage to the panels, while ensuring high laying quality;
- makes it possible to provide moisture-proof floors;
- 5 - makes it possible to obviate the need of accurate, separate placement of an underlay before laying the floor panels; and
- considerably cuts the time for joining the panels.

10 These and other objects of the invention are achieved by means of a panel-joining system having the features recited in the appended claims.

Thus, the invention provides a <sup>method of laying</sup> ~~system for making a~~ joint ~~along adjacent joint edges of~~ two building panels, especially floor panels, in which joint:

15 the adjacent joint edges together form a first mechanical connection locking the joint edges to each other in a first direction at right angles to the principal plane of the panels, and

20 a locking device arranged on the rear side of the panels forms a second mechanical connection locking the panels to each other in a second direction parallel to the principal plane and at right angles to the joint edges, said locking device comprising a locking groove which extends parallel to and spaced from the joint edge  
25 of one of said panels, termed groove panel, and which is open at the rear side of the groove panel, said system being characterised in

that the locking device further comprises a strip integrated with the other of said panels, termed strip  
30 panel, said strip extending throughout substantially the entire length of the joint edge of the strip panel and being provided with a locking element projecting from the strip, such that when the panels are joined together, the strip projects on the rear side of the groove panel with  
35 its locking element received in the locking groove of the groove panel,

The system according to the invention makes it possible to provide concealed, precise locking of both the short and long sides of the panels in hard, thin floors. The floor panels can be quickly and conveniently dis-  
 5 assembled in the reverse order of laying without any risk of damage to the panels, ensuring at the same time a high laying quality. The panels can be assembled and dis-  
 assembled much faster than in present-day systems, and any damaged or worn-out panels can be replaced by taking  
 10 up and re-laying parts of the floor.

According to an especially preferred embodiment of the invention, a <sup>method</sup> ~~system~~ is provided which permits precise joining of thin floor panels having, for example, a thickness of the order of 3 mm and which at the same time  
 15 provides a tolerance-independent smooth top face at the joint. To this end, the strip is mounted in an equalising groove which is countersunk in the rear side of the strip panel and which exhibits an exact, predetermined distance from its bottom to the front side of the strip panel. The  
 20 part of the strip projecting behind the groove panel engages a corresponding equalising groove, which is countersunk in the rear side of the groove panel and which exhibits the same exact, predetermined distance from its bottom to the front side of the groove panel.  
 25 The thickness of the strip then is at least so great that the rear side of the strip is flush with, and preferably projects slightly below the rear side of the panels. In this embodiment, the panels will always rest, in the joint, with their equalising grooves on a strip. This  
 30 levels out the tolerance and imparts the necessary strength to the joint. The strip transmits horizontal and upwardly-directed forces to the panels and downwardly-directed forces to the existing subfloor.

Preferably, the strip may consist of a material  
 35 which is flexible, resilient and strong, and can be sawn. A preferred strip material is sheet aluminium. In an alu-

24. Juni 1999

Druckexemplar

~~AMENDED~~ CLAIMS

1. A method for laying and mechanically joining rectangular building panels (1, 2) in parallel rows, especially floor panels, said panels (1, 2) being provided with means for mechanically locking together their long edges as well as their short edges in a first direction (D1) at right angles to the principal plane of the panels (1, 2), characterised in that each panel (1, 2), at a rear side thereof, being provided with (i) a locking strip (6, 6') at one long edge (3) and at one short edge (3'), each locking strip (6, 6') being either a separate element connected to the panel or an extension of a lower part of the joint edge (3, 3') and extending throughout substantially the entire length of the corresponding edge (3, 3') and being provided with a locking element (8) projecting from the strip (6, 6'), and (ii) a locking groove (14, 14') at an opposite long edge (4) and at an opposite short edge (4') for receiving a locking element (8) of an adjacent panel, each locking groove (14, 14') extending parallel to and spaced from the corresponding edge (4, 4') and being open at a rear side of the panel; and in that said method includes the following two main locking steps S1 and S2 for laying a new panel:

S1: mechanically connecting a long edge (4 or 3) of the new panel to a long edge (3 or 4) of a previously laid first panel in a first row in such a way that the new panel and the first panel, as a result of said first main locking step S1, are mechanically locked to each other in said first direction (D1) as well as in a second direction (D2) parallel to said principal plane and at right angles to the locked long edges (3, 4), wherein said first main locking step S1 to this end includes



either:

- 5       - the substep of placing the new panel in a second row adjacent to said first row with the long edge (4) of the new panel provided with a locking groove (14) being placed upon and in contact with a locking strip (6) at the adjacent long edge (3) of the first panel, while holding the new panel at an angle relative to a principal plane of the first panel and at a distance from its final longitudinal position relative to a previously laid second panel in said second row, and
- 10       - the substep of subsequently angling down the new panel so as to accommodate the locking element (8) of said strip (6) of the first panel in said locking groove (14) of the new panel,

or

- 20       - the substep of placing the new panel in a second row adjacent to said first row with the locking strip (6) being provided at a long edge (3) of the new panel being inserted under the adjacent long edge (4) of the first panel being provided with a locking groove (14), while holding the new panel at an angle relative to a principal plane of the first panel and at a distance from its final longitudinal position relative to a previously laid second panel in said second row, and
- 25       - the substep of subsequently angling down the new panel so as to accommodate the locking element (8) of said strip (6) of the new panel in said locking groove (14) of the first panel,
- 30       - the substep of subsequently angling down the new panel so as to accommodate the locking element (8) of said strip (6) of the new panel in said locking groove (14) of the first panel,
- 35       - the substep of subsequently angling down the new panel so as to accommodate the locking element (8) of said strip (6) of the new panel in said locking groove (14) of the first panel,

and

S2 mechanically connecting a short edge of the new panel to a short edge of said previously laid second panel in the second row in such a way that the new panel and the second panel, as a result of said second main locking step S2, are mechanically locked to each other at said short edges (3', 4') in said first direction (D1) as well as in a third direction (D3) parallel to said principal plane and at right angles to the short edges (3', 4'), wherein said second main locking step S2 is performed by a linear displacement of the new panel in its longitudinal direction relative to the first panel towards said final longitudinal position until the locking element (8) of the strip (6') at one (4') of the short edges is received in the locking groove (14') at the other one (4') of the short edges, whereby the new panel, in its final laid position, is mechanically connected in two direction (D1, D2) at its long edge to the first panel and in two direction (D1, D3) at its short edge to the second panel.

2. A method as claimed in claim 1, wherein, as a result of said linear displacement of the new panel, the locking strip (6') located at the short edges (3', 4') to be locked together is bent downwards until the locking element (8) snaps up into the locking groove (14').

*method*  
3. A *method* as claimed in claim 1 or 2, wherein the short edge (4') of the new panel to be locked to the short edge (3') of the second panel presents a locking groove (14') for engagement with a locking element (8) of the second panel.

4. A method as claimed in claim 3, wherein the new panel is angled down into a position where the end

portion of the new panel facing the second panel is placed upon and in contact with the locking strip (6') at the short edge (3') of the second panel.

5        5. A method as claimed in claim 1 or 2, wherein the short edge (3') of the new panel to be locked to the short edge (4') of the second panel presents a locking strip (6') with a locking element (8) for engagement with a locking groove (14') of the second panel.

10

6. A method as claimed in any one of claims 1-5, wherein said substep of angling down the new panel is performed while holding an upper corner part of the long edge of the new panel in contact with an upper corner part of the long edge of the first panel.

15

7. A method according to any one of claims 1-6, wherein the new panel, after having been laid and mechanically joined to the first and to the second panel, can be taken up by angling the new panel and the second panel together upwards in relation to the first panel and subsequently loosening the new panel from the second panel by angling and/or linear displacing the new panel in relation to the second panel.

25

8. A method as claimed in claim 7, wherein said step of angling the new panel and the second panel together in relation to the first panel can be performed while holding an upper corner part of the long edge of the new panel in contact with an upper corner part of the long edge of the first panel.

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☑ EPA/EPO/OEB  
D-80298 München  
☎ +49 89 2399-0  
TX 523 656 epmu d  
FAX +49 89 2399-4465

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Direction Générale 2

Giver, Sören Bo  
Awapatent AB,  
P.O. Box 5117  
200 71 Malmö  
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1999 -08- 13

AWAPATENT, Malmö

DAGBOK

319 -11/12



Application No. 98 106 535.2-2303	Ref. 2980609	Date 11.08.99
Applicant Välinge Aluminium AB		

**Communication under Rule 51(4) EPC**

You are hereby informed that the Examining Division intends to grant a European patent on the basis of the above application with the text and drawings as indicated below:

Text for the Contracting States:

AT BE CH LI DE DK ES FR GB GR IE IT LU MC NL PT SE

**Description, pages:**

1-19 as originally filed

**Claims, No.:**

1-8 as received on 24.06.1999 with letter of 17.06.1999

**Drawings, sheets:**

1-6 as originally filed

With the following amendments to the above-mentioned documents by the Examining Division:

Description, pages: 1\*,5\*,6\*,8\*

Claim, No.: 3

**Comments:**

- \* Article 84 EPC: The claims shall define the matter for which protection is sought. They shall be clear and concise and be **supported by the description**



Date

11.08.99

Sheet 2

Application-No.: 98 106 535.2

A copy of the relevant documents is enclosed.

The title of the invention in the three official languages of the European Patent Office, the international patent classification, the designated Contracting States and the registered name of the applicant are shown on the attached EPO Form 2056.

You are requested to state your approval of the text specified above **within four months** of this notification. Failure to do so will result in refusal of the application under Article 97(1) EPC, except as provided by Rule 51(5) EPC, second sentence.

The filing of a divisional application is only possible up to the approval of the text specified above (Rule 25(1) EPC). Concerning the possibility of a request for accelerated grant pursuant to Article 97(6) EPC, reference is made to OJ EPO 1995, 841.

Further information concerning the acceptability of amendments or the filing of a separate set of claims for one or more designated Contracting States that have entered a reservation under Article 167(2)a) EPC will be found in the Guidelines for Examination in the EPO, C-VI, 4.8 - 4.10 and C-VI, 15.1.2 - 15.1.4.

If the translation of the priority document(s), as required by Article 88(1) EPC, or the declaration according to Rule 38(4) EPC has not yet been filed, it is to be filed within the time limit mentioned in Rule 38(4) EPC at the latest.



Himmel, U  
For the Examining Division  
Tel. No.: (+49-89) 2399-2449

Enclosure(s): Form 2056  
29 Copies of the relevant documents



☐ EPA/EPO/OEB  
D-80298 München  
☎ +49 89 2399-0  
TX 523 656 epmu d  
FAX +49 89 2399-4465

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Giver, Sören Bo  
Awapatent AB,  
P.O. Box 5117  
200 71 Malmö  
SUEDE

Application No. 98 106 535.2-2303	Ref. 2980609	Date 11.08.99
Applicant Välinge Aluminium AB		

For the intended grant of a European patent, (1) the title of the invention in the three official languages of the European Patent Office, (2) the International Patent Classification, (3) the designated Contracting States and (4) the applicant's registered name, address and country of residence or principal place of business are set out below.

- (1)
  - Methode zum Verlegen und mechanischen Verbinden von Bauplatten
  - A method for laying and mechanically joining building panels
  - Méthode pour la pose et la jonction d'éléments de construction
- (2) E04F15/14, E04F15/02, E04F13/08
- (3) AT BE CH LI DE DK ES FR GB GR IE IT LU MC NL PT SE
- (4) Välinge Aluminium AB  
Kyrkogrand 1  
260 40 Viken  
SE



EPA/EPO/OEB.  
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Prioritätsverfahren, Einsprüche, und Beschwerdeverfahren  
 Patent grant, opposition and appeal procedures  
 Procédures de délivrance, d'opposition et de recours  
 Verwaltungsverfahren - Office administrative matters  
 Questions administratives concernant l'office

Fax 089 / 2399 - 4560

Nr. - No. - N°

Gesamtblattzahl

Total number of pages

0046 42 16 09 42

Nombre de feuilles

5 (including this

cover page)

Empfänger - Addressee - Destinataire

Name - Nom

Anschrift - Address - Adresse

AWAPATENT

Helsingborg (SE)

Mr. Sören GIVER

Absender - Sender - Expéditeur

Name - Nom

Anschrift - Address - Adresse

Françoise IDE, Formalities Officer

Tel: +49 89 2399 2449

Fax:

Bemerkungen - Remarks - Remarques

EP applications 98106535.2-2303 and 98201555.4-2303 in the name of Vålinge Aluminium AB

Reference is made to our telephone conversation.

Please find attached a copy via fax of the EPO Form 2004 for both applications.

The original letters will leave the EPO per registered mail on 11/08/99.

Best regards and nice weekend.

6.08.1999

Datum - Date

Unterschrift - Signature

6. AUG. 1999 14:33

EPA-PCT MUENCHEN 089/2399-2740

NR. 8019 S. 2/5



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D-80298 München  
+49 89 2399-0  
TX 523 656 epmu d  
FAX +49 89 2399-4465

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Giver, Sören Bo  
Awapatent AB,  
P.O. Box 5117  
200 71 Malmö  
SUEDE

DAGBOK			
cll	9/9	11/12	CS



Application No. 98 106 535.2-2303	Ref. 2980609	Date 11.08.99
Applicant Välinge Aluminium AB		

#### Communication under Rule 51(4) EPC

You are hereby informed that the Examining Division intends to grant a European patent on the basis of the above application with the text and drawings as indicated below:

Text for the Contracting States:

AT BE CH LI DE DK ES FR GB GR IE IT LU MC NL PT SE

#### Description, pages:

1-19 as originally filed

#### Claims, No.:

1-8 as received on 24.06.1999 with letter of 17.06.1999

#### Drawings, sheets:

1-6 as originally filed

With the following amendments to the above-mentioned documents by the Examining Division:

Description, pages: 1\*,5\*,6\*,8\*

Claim, No.: 3

#### Comments:

- Article 84 EPC: The claims shall define the matter for which protection is sought. They shall be clear and concise and be supported by the description





Date

1 1. 08. 99

Sheet 2

Application-No.: 98 106 535.2

A copy of the relevant documents is enclosed.

The title of the invention in the three official languages of the European Patent Office, the international patent classification, the designated Contracting States and the registered name of the applicant are shown on the attached EPO Form 2056.

You are requested to state your approval of the text specified above within four months of this notification. Failure to do so will result in refusal of the application under Article 97(1) EPC, except as provided by Rule 51(5) EPC, second sentence.

The filing of a divisional application is only possible up to the approval of the text specified above (Rule 25(1) EPC). Concerning the possibility of a request for accelerated grant pursuant to Article 97(6) EPC, reference is made to OJ EPO 1995, 841.

Further information concerning the acceptability of amendments or the filing of a separate set of claims for one or more designated Contracting States that have entered a reservation under Article 167(2)a) EPC will be found in the Guidelines for Examination in the EPO, C-VI, 4.8 - 4.10 and C-VI, 15.1.2 - 15.1.4.

If the translation of the priority document(s), as required by Article 88(1) EPC, or the declaration according to Rule 38(4) EPC has not yet been filed, it is to be filed within the time limit mentioned in Rule 38(4) EPC at the latest.



Himmel, U  
For the Examining Division  
Tel. No.: (+49-89) 2399-2449

Enclosure(s): Form 2056  
29 Copies of the relevant documents

**AWAPATENT**Helsingborg  
17 June 1999Our ref.  
EP-2980609Handled by  
Sören GiverAttention  
DG 2EUROPEAN PATENT OFFICE  
D-80298 MÜNCHEN

SENT VIA FAX

ORIGINAL VIA REGISTERED MAIL

European Patent Application No 98106535.2-2303  
in the name of VÄLINGE ALUMINIUM AB

Dear Sirs,

This is in response to your Communication dated 24 March 1999.

The claims have been amended having regard to the objections and suggestions set out in your Communication. A set of new claims 1-8 is hereby enclosed in triplicate, together with an additional copy thereof including revision markings, in order to identify the amendments made. No new matter has been introduced into the new claims.

Your objections and suggestions will now be addressed using the same paragraph numbers as in your Communication:

1. Old claims 10-15 directed to a method for producing a floor have been cancelled.
2. New claim 1 is a combination of old claims 1 and 2, using the either/or formulation according to your suggestion. In the first alternative, the long side of a new panel is placed with its grooved long edge upon a locking strip of a previously laid first panel.

<b>HELSINGBORG</b>	<b>VAT No. SE556082702301</b>			<b>Other AWAPATENT offices:</b>
<b>STREET ADDRESS:</b> Berga allé 1 HELSINGBORG SWEDEN	<b>POSTAL ADDRESS:</b> Berga allé 1 S-254 52 HELSINGBORG SWEDEN	<b>Telephone</b> +46 42 16 30 45 <b>Fax</b> +46 42 16 09 42 <b>Email</b> mail@awapatent.com	<b>MALMÖ (Head office and registered office)</b> STOCKHOLM SÖDERHAMN LIDKÖPING ÖSTERSUND	<b>GÖTEBORG</b> VÄXJÖ VARBERG

3. With respect to the Art. 123(2) objection relating to the play feature, it is respectfully submitted that the feature in question is not an essential feature to the inventive laying method claimed in the present application. The laying method can be clearly defined without this feature.

- A locking system (apparatus claims)

- A method for assembling building panels for enabling 4-side locking, by an angling-displacing-snapping technique.

Thus, the present divisional application seek protection for a second, different invention, and features that are essential to the first invention claimed in the parent application are necessarily not essential to a second, different invention claimed in a divisional. More specifically, in the present application the method as claimed in claim 1 is described on page 10, lines 6-28, without any mention the feature in question. The inventive method, including its different steps and substeps, is clearly disclosed in the description and clearly defined in the claims without this feature.

4. Claim 1 has been clarified according to your suggestion in respect of the two alternative embodiments of the strip (separate component or one-piece embodiment).

As to the last objection under paragraph 4 in your Communication, it is not clear what amendments are considered by the Examiner. It is stated that the "shape" of the projections and grooves should be more clearly defined. However, the actual shape of the locking element and of the locking groove can be altered in many different way within the scope of the inventive method. A more specific definition of the structural shape would lead to an unjustified limitation of the scope of protection. Claim 1 identifies all essential features of these components, such as their locations in relation to the panel and the joint edges and their functions. In order to make the claim somewhat clearer, amended claim 1 hereby submitted now states that the locking element projects from the strip and that the locking groove is for receiving the locking element. The last-mentioned feature can be considered as defining the shape of the two components in functional terms. In case the Examiner should consider it necessary to make additional clarifications, a telephone discussion on this issue is respectfully requested.

5. Clear copies of the drawings previously submitted from the priority application is hereby enclosed.
6. Reference signs have been inserted into in the claims in order to comply with Rule 29 EPC.

Yours faithfully,

Sören Giver  
Authorised Representative  
AWAPATENT AB

Encls  
New, amended claims 1-8  
Drawings from priority application

## AMENDED CLAIMS

1. A method for laying and mechanically joining rectangular building panels (1, 2) in parallel rows, especially floor panels, said panels (1, 2) being provided with means for mechanically locking together their long edges as well as their short edges in a first direction (D1) at right angles to the principal plane of the panels (1, 2), characterised in that each panel (1, 2), at a rear side thereof, being provided with (i) a locking strip (6, 6') at one long edge (3) and at one short edge (3'), each locking strip (6, 6') being either a separate element connected to the panel or an extension of a lower part of the joint edge (3, 3') and extending throughout substantially the entire length of the corresponding edge (3, 3') and being provided with a locking element (8) projecting from the strip (6, 6'), and (ii) a locking groove (14, 14') at an opposite long edge (4) and at an opposite short edge (4') for receiving a locking element (8) of an adjacent panel, each locking groove (14, 14') extending parallel to and spaced from the corresponding edge (4, 4') and being open at a rear side of the panel; and in that said method includes the following two main locking steps S1 and S2 for laying a new panel:

S1: mechanically connecting a long edge (4 or 3) of the new panel to a long edge (3 or 4) of a previously laid first panel in a first row in such a way that the new panel and the first panel, as a result of said first main locking step S1, are mechanically locked to each other in said first direction (D1) as well as in a second direction (D2) parallel to said principal plane and at right angles to the locked long edges (3, 4), wherein said first main locking step S1 to this end includes

either:

- the substep of placing the new panel in a second row adjacent to said first row with the long edge (4) of the new panel provided with a locking groove (14) being placed upon and in contact with a locking strip (6) at the adjacent long edge (3) of the first panel, while holding the new panel at an angle relative to a principal plane of the first panel and at a distance from its final longitudinal position relative to a previously laid second panel in said second row, and
- the substep of subsequently angling down the new panel so as to accommodate the locking element (8) of said strip (6) of the first panel in said locking groove (14) of the new panel,

or

- the substep of placing the new panel in a second row adjacent to said first row with the locking strip (6) being provided at a long edge (3) of the new panel being inserted under the adjacent long edge (4) of the first panel being provided with a locking groove (14), while holding the new panel at an angle relative to a principal plane of the first panel and at a distance from its final longitudinal position relative to a previously laid second panel in said second row, and
- the substep of subsequently angling down the new panel so as to accommodate the locking element (8) of said strip (6) of the new panel in said locking groove (14) of the first panel,

and

S2 mechanically connecting a short edge of the new panel to a short edge of said previously laid second panel in the second row in such a way that the new panel and the second panel, as a result of said second main locking step S2, are mechanically locked to each other at said short edges (3', 4') in said first direction (D1) as well as in a third direction (D3) parallel to said principal plane and at right angles to the short edges (3', 4'), wherein said second main locking step S2 is performed by a linear displacement of the new panel in its longitudinal direction relative to the first panel towards said final longitudinal position until the locking element (8) of the strip (6') at one (4') of the short edges is received in the locking groove (14') at the other one (4') of the short edges, whereby the new panel, in its final laid position, is mechanically connected in two direction (D1, D2) at its long edge to the first panel and in two direction (D1, D3) at its short edge to the second panel.

2. A method as claimed in claim 1, wherein, as a result of said linear displacement of the new panel, the locking strip (6') located at the short edges (3', 4') to be locked together is bent downwards until the locking element (8) snaps up into the locking groove (14').

3. A as claimed in claim 1 or 2, wherein the short edge (4') of the new panel to be locked to the short edge (3') of the second panel presents a locking groove (14') for engagement with a locking element (8) of the second panel.

4. A method as claimed in claim 3, wherein the new panel is angled down into a position where the end

portion of the new panel facing the second panel is placed upon and in contact with the locking strip (6') at the short edge (3') of the second panel.

- 5        5. A method as claimed in claim 1 or 2, wherein the short edge (3') of the new panel to be locked to the short edge (4') of the second panel presents a locking strip (6') with a locking element (8) for engagement with a locking groove (14') of the second panel.

10

6. A method as claimed in any one of claims 1-5, wherein said substep of angling down the new panel is performed while holding an upper corner part of the long edge of the new panel in contact with an upper corner part of the long edge of the first panel.

15

7. A method according to any one of claims 1-6, wherein the new panel, after having been laid and mechanically joined to the first and to the second panel, can be taken up by angling the new panel and the second panel together upwards in relation to the first panel and subsequently loosening the new panel from the second panel by angling and/or linear displacing the new panel in relation to the second panel.

20

8. A method as claimed in claim 7, wherein said step of angling the new panel and the second panel together in relation to the first panel can be performed while holding an upper corner part of the long edge of the new panel in contact with an upper corner part of the long edge of the first panel.

25

30



## AMENDED CLAIMS

1. A method for laying and mechanically joining rectangular building panels (1, 2) in parallel rows, especially floor panels, said panels (1, 2) being provided with means for mechanically locking together their long edges as well as their short edges in a first direction (D1) at right angles to the principal plane of the panels (1, 2), characterised in that each panel (1, 2), at a rear side thereof, being provided with (i) a locking strip (6, 6') at one long edge (3) and at one short edge (3'), each locking strip (6, 6') being either integrated with the panel as a separate element connected to the panel or as an extension of a lower part of the joint edge (3, 3') and extending throughout substantially the entire length of the corresponding edge (3, 3') and being provided with a projecting locking element (8) projecting from the strip (6, 6'), and (ii) a locking groove (14, 14') at an opposite long edge (4) and at an opposite short edge (4') for receiving a locking element (8) of an adjacent panel, each locking groove (14, 14') extending parallel to and spaced from the corresponding edge (4, 4') and being open at a rear side of the panel; and in that said method includes the following two main locking steps S1 and S2- for laying a new panel:

S1: mechanically connecting a long edge (4 or 3) of the new panel to a long edge (3 or 4) of a previously laid first panel in a first row in such a way that the new panel and the first panel, as a result of said first main locking step S1, are mechanically locked to each other in said first direction (D1) as well as in a second direction (D2) parallel to said principal plane and at right angles to the locked long edges (3, 4), wherein said first main locking step S1 to this end includes

either:

5       - the substep of placing the new panel in a second row adjacent to said first row with the long edge (4) of the new panel provided with a locking groove (14) being placed upon and in contact with a locking strip (6) at the adjacent long edge (3) of the first panel, while holding the new panel  
10       at an angle relative to a principal plane of the first panel and at a distance from its final longitudinal position relative to a previously laid second panel in said second row, and

15       - the substep of subsequently angling down the new panel so as to accommodate the locking element (8) of said strip (6) of the first panel in said locking groove (14) of the new panel,

20       or

25       - the substep of placing the new panel in a second row adjacent to said first row with the locking strip (6) being provided at a long edge (3) of the new panel being inserted under the adjacent long edge (4) of the first panel being provided with a locking groove (14), while holding the new panel at an angle relative to a principal plane of the first panel and at a distance from its  
30       final longitudinal position relative to a previously laid second panel in said second row, and

and,

35       - the substep of subsequently angling down the new panel so as to accommodate the locking element (8) of said strip (6) of the new panel in said

locking groove (14) of the first panel,

and

5 S2 — mechanically connecting a short edge of the new panel to a short edge of said previously laid second panel in the second row in such a way that the new panel and the second panel, as a result of said second main locking step S2, are mechanically locked  
10 to each other at said short edges (3', 4') in said first direction (D1) as well as in a second-third direction (D2D3) parallel to said principal plane and at right angles to the short edges (3', 4'), wherein said second main locking step S2 is performed by a  
15 linear displacement of the new panel in its longitudinal direction relative to the first panel towards said final longitudinal position until the locking element (8) of the strip (6') at one (4') of the short edges is received in the locking groove (14') at the other one (4') of the short edges,  
20 whereby the new panel, in its final laid position, is mechanically connected in two direction (D1, D2) at its long edge to the first panel and in two direction (D1, D3) at its short edge to the second panel.

25 -

~~2. A method for laying and mechanically joining rectangular building panels in parallel rows, especially floor panels, said panels being provided with means for  
30 mechanically locking together their long edges as well as their short edges in a first direction (D1) at right angles to the principal plane of the panels, characterised in that each panel, at a rear side thereof, being provided with (i) a locking strip at  
35 one long edge and at one short edge, each locking strip being integrated with the panel as a separate element connected to the panel or as an extension of a lower part~~

of the joint edge and extending throughout substantially the entire length of the corresponding edge and being provided with a projecting locking element, and (ii) a locking groove at an opposite long edge and at an opposite short edge, each locking groove extending parallel to and spaced from the corresponding edge and being open at a rear side of the panel, and in that said method includes the following two main locking steps S1 and S2 for laying a new panel:

10 S1: mechanically connecting a long edge of the new panel to a long edge of a previously laid first panel in a first row in such a way that the new panel and the first panel, as a result of said first main locking step S1, are mechanically locked to each other in  
15 said first direction (D1) as well as in a second direction (D2) parallel to said principal plane and at right angles to the locked long edges, wherein said first main locking step S1 to this end includes the substep of placing the new panel in a second row adjacent to said first row with the locking strip  
20 being provided at a long edge of the new panel being inserted under the adjacent long edge of the first panel being provided with a locking groove, while holding the new panel at an angle relative to a principal plane of the first panel and at a distance  
25 from its final longitudinal position relative to a previously laid second panel in said second row, and the substep of subsequently angling down the new panel so as to accommodate the locking element of said strip of the new panel in said locking groove of  
30 the first panel,

and,

S2: mechanically connecting a short edge of the new panel to a short edge of said previously laid second panel in the second row in such a way that the new panel and the second panel, as a result of said second main locking step, are mechanically locked to each other

at said short edges in said first direction (D1) as  
 well as in a second direction (D2) parallel to said  
 principal plane and at right angles to the short  
 edges, wherein said second main locking step S2 is  
 5 performed by a linear displacement of the new panel  
 in its longitudinal direction relative to the first  
 panel towards said final longitudinal position until  
 the locking element of the strip at one of the short  
 edges is received in the locking groove at the other  
 10 one of the short edges, whereby the new panel, in its  
 final laid position, is mechanically connected in two  
 direction (D1, D2) at its long edge to the first  
 panel and at its short edge to the second panel.

15 32. A method as claimed in claim 1 or 2, wherein, as  
 a result of said linear displacement of the new panel,  
 the locking strip (6') located at the short edges (3',  
 4') to be locked together is bent downwards until the  
 locking element (8) snaps up into the locking groove  
 20 (14').

34. A method for producing a floor as claimed in any  
 one of claims 1-3 claim 1 or 2, wherein the short edge  
 (4') of the new panel to be locked to the short edge (3')  
 25 of the second panel presents a locking groove (14') for  
 engagement with a locking element (8) of the second  
 panel.

30 45. A method as claimed in claim 43, wherein the new  
 panel is angled down into a position where the end por-  
 tion of the new panel facing the second panel is placed  
 upon and in contact with the locking strip (6') at the  
 short edge (3') of the second panel.

35 56. A method as claimed in ~~any one of claims 1-3~~  
 claim 1 or 2, wherein the short edge (3') of the new  
 panel to be locked to the short edge (4') of the second  
 panel presents a locking strip (6') with a locking

element (8) for engagement with a locking groove (14') of the second panel.

76. A method as claimed in any one of claims 1-65,  
 5 wherein said substep of angling down the new panel is performed while holding an upper corner part of the long edge of the new panel in contact with an upper corner part of the long edge of the first panel.

87. A method according to any one of claims 1-76,  
 10 wherein the new panel, after having been laid and mechanically joined to the first and to the second panel, can be taken up by angling the new panel and the second panel together upwards in relation to the first panel and  
 15 subsequently loosening the new panel from the second panel by angling and/or linear displacing the new panel in relation to the second panel.

98. A method as claimed in claim 87, wherein said  
 20 step of angling the new panel and the second panel together in relation to the first panel can be performed while holding an upper corner part of the long edge of the new panel in contact with an upper corner part of the long edge of the first panel.

25  
~~10. A method for producing a floor, comprising the step of manufacturing a plurality of rectangular floor panels provided with means for mechanically locking together their long edges as well as their short edges in a first direction (D1) at right angles to the principal plane of the panels, characterised by the step of providing each panel, during the manufacturing and at the rear side of the panel, with (i) a locking strip at one long edge and at one short edge, each locking strip~~  
 30  
~~being integrated with the panel as a separate element connected to the panel or as an extension of a lower part of the joint edge and extending throughout substantially~~  
 35

~~the entire length of the corresponding edge and being provided with a projecting locking element, and (ii) a locking groove at an opposite long edge and at an opposite short edge, each locking groove extending parallel to and spaced from the corresponding edge and being open at a rear side of the panel,~~  
~~wherein said integrated strips, said grooves and said locking elements are provided in such a way during the manufacturing that:~~

~~(i) when two adjacent panels have been mechanically joined together along adjacent edges thereof, a strip of one of the panels projects on the rear side of the other panel with the locking element of said strip being received in a locking groove of the other panel, thereby locking the two panels to each other also in a second direction (D2) parallel to said principal plane and at right angles to the joined edges; and~~  
~~(ii) the following laying steps 1-3 can be performed for producing the floor when a new panel is laid and mechanically connected to a long edge of a previously laid first panel in a first row as well as to a short edge of a previously laid second panel in an adjacent second row, said first and second panels being already mechanically connected to each other at adjacent long edges thereof:~~

- ~~1. placing the new panel in the second row, while holding the new panel at an angle relative to a principal plane of the first panel, such that the new panel is spaced from its final longitudinal position relative to said second panel and such that the long edge of the new panel provided with a locking groove is placed upon and in contact with a locking strip at the adjacent long edge of the first panel,~~
- ~~2. subsequently angling down the new panel so as to accommodate the locking element of said strip of the first panel in said locking groove of the new panel, whereby the new panel and the first panel are mechanically connected with each other in said second~~

direction (D2) with respect to the thus connected long edges, wherein said long edges, in the thus angled down position of the new panel, being in engagement with each other and thereby mechanically locked together in said first direction (D1) also, and finally

3. displacing the new panel in its longitudinal direction relative to the first panel towards said final longitudinal position until the locking element of one of the short edges snaps up into the locking groove of the other one of the short edges, whereby the new panel and the second panel are mechanically connected with each other in both in said first direction (D1) and in said second direction (D2) with respect to the thus connected short edges.

11. A method for producing a floor, comprising the step of manufacturing a plurality of rectangular floor panels provided with means for mechanically locking together their long edges as well as their short edges in a first direction (D1) at right angles to the principal plane of the panels, characterised by the step of providing each panel, during the manufacturing and at the rear side of the panel, with (i) a locking strip at one long edge and at one short edge, each locking strip being integrated with the panel as a separate element connected to the panel or as an extension of a lower part of the joint edge and extending throughout substantially the entire length of the corresponding edge and being provided with a projecting locking element, and (ii) a locking groove at an opposite long edge and at an opposite short edge, each locking groove extending parallel to and spaced from the corresponding edge and being open at a rear side of the panel, wherein said integrated strips, said grooves and said locking elements are provided during the manufacturing in such a way that:



- ~~(i) when two adjacent panels have been mechanically joined together along adjacent edges thereof, a strip of one of the panels projects on the rear side of the other panel with the locking element of said strip being received in a locking groove of the other panel, thereby locking the two panels to each other also in a second direction (D2) parallel to said principal plane and at right angles to the joined edges; and~~
- ~~(ii) the following laying steps 1-3 can be performed for producing the floor when a new panel is laid and mechanically connected to a long edge of a previously laid first panel in a first row as well as to a short edge of a previously laid second panel in an adjacent second row, said first and second panels being already mechanically connected to each other at adjacent long edges thereof:~~
- ~~1. placing the new panel in the second row, while holding the new panel at an angle relative to a principal plane of the first panel, such that the new panel is spaced from its final longitudinal position relative to said second panel and such that a locking strip provided at a long edge of the new panel is inserted under the adjacent long edge of the first panel being provided with a locking groove,~~
  - ~~2. subsequently angling down the new panel so as to accommodate the locking element of said strip of the new panel in said locking groove of the first panel, whereby the new panel and the first panel are mechanically connected with each other in said second direction (D2) with respect to the thus connected long edges, wherein said long edges, in the thus angled down position of the new panel, being in engagement with each other and thereby mechanically locked together in said first direction (D1) also, and finally~~
  - ~~3. displacing the new panel in its longitudinal direction relative to the first panel towards said final longitudinal position until the locking element of~~

one of the short edges snaps up into the locking groove of the other one of the short edges, whereby the new panel and the second panel are mechanically connected with each other in both in said first direction (D1) and in said second direction (D2) with respect to the thus connected short edges.

12. A method for producing a floor as claimed in claim 10 or 11, wherein the locking strip located at the short edges to be locked together is provided in such a way that it is bent downwards as a result of displacing the new panel, until the locking element snaps up into the locking groove.

13. A method for producing a floor as claimed in any one of claim 10-12, wherein the short edge of the new panel to be locked to the short edge of the second panel presents a locking groove for engagement with a locking element of the second panel.

14. A method for producing a floor as claimed in claim 13, wherein the new panel is angled down into a position where the end portion of the new panel facing the second panel is placed upon and in contact with the locking strip at the short edge of the second panel.

15. A method for producing a floor as claimed in any one of claims 10-12, wherein the short edge of the new panel to be locked to the short edge of the second panel presents a locking strip with a locking element for engagement with a locking groove of the second panel.

FIG 1

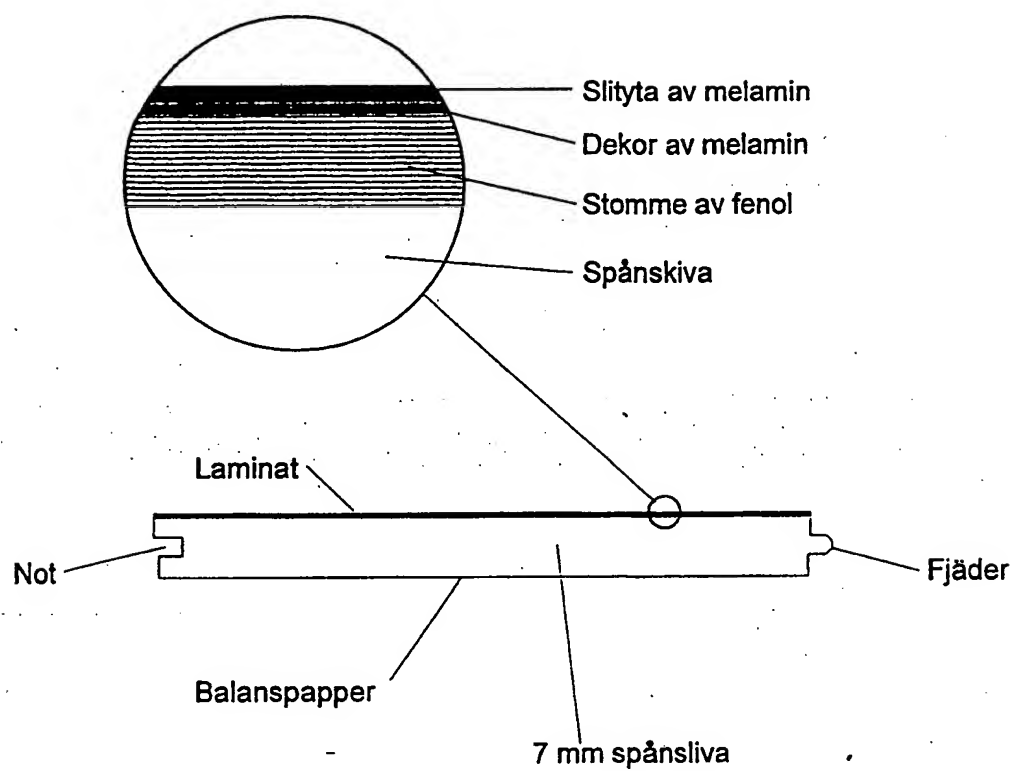


FIG 2

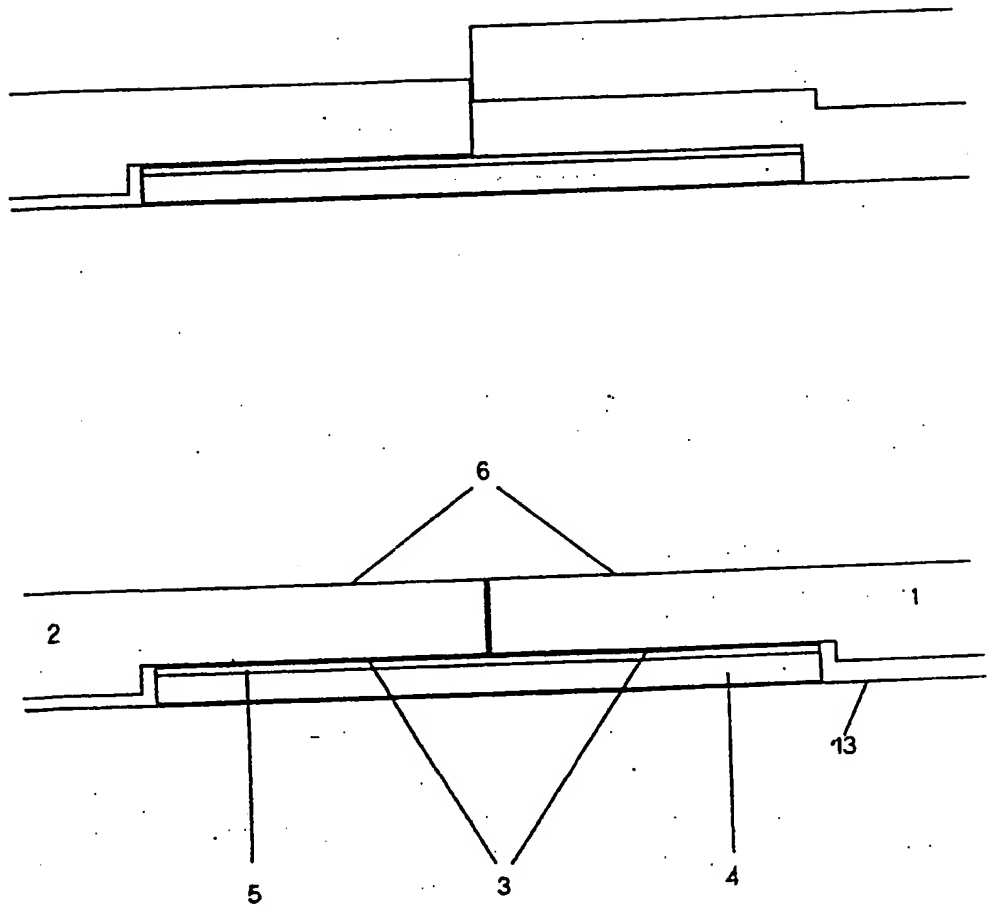


FIG 3

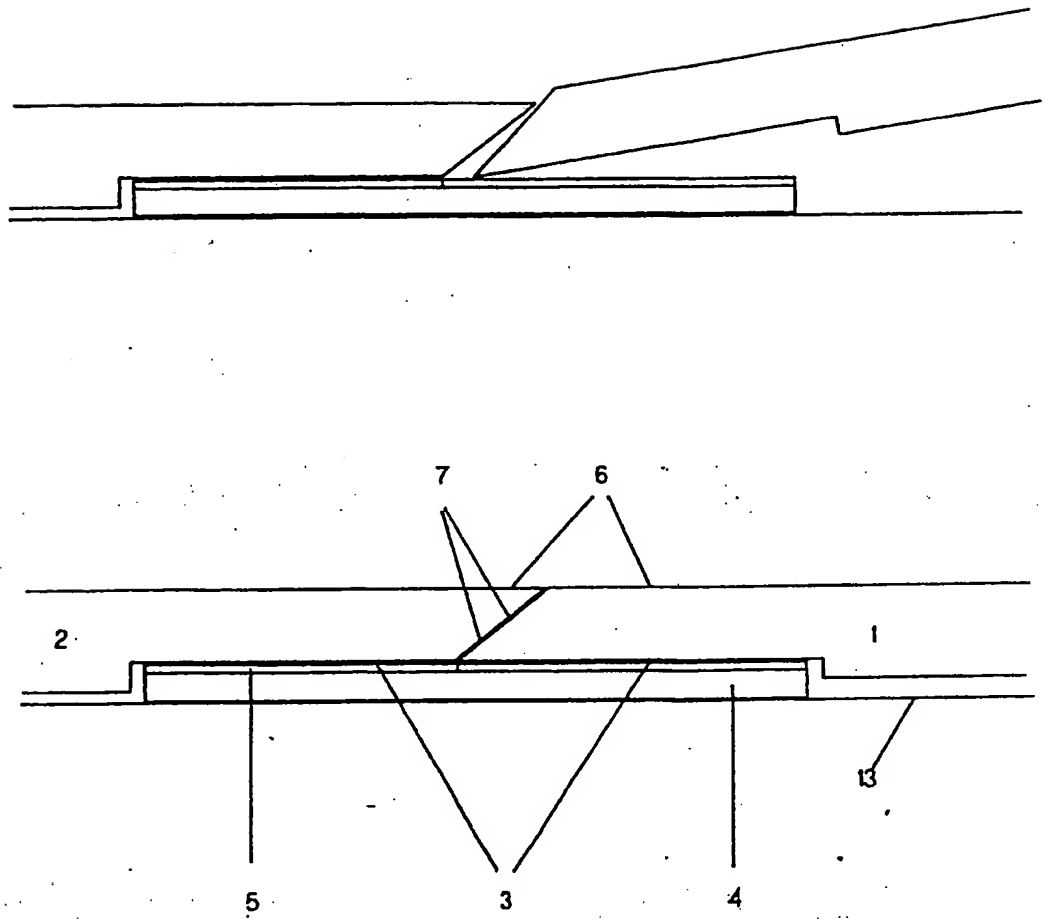


FIG 4

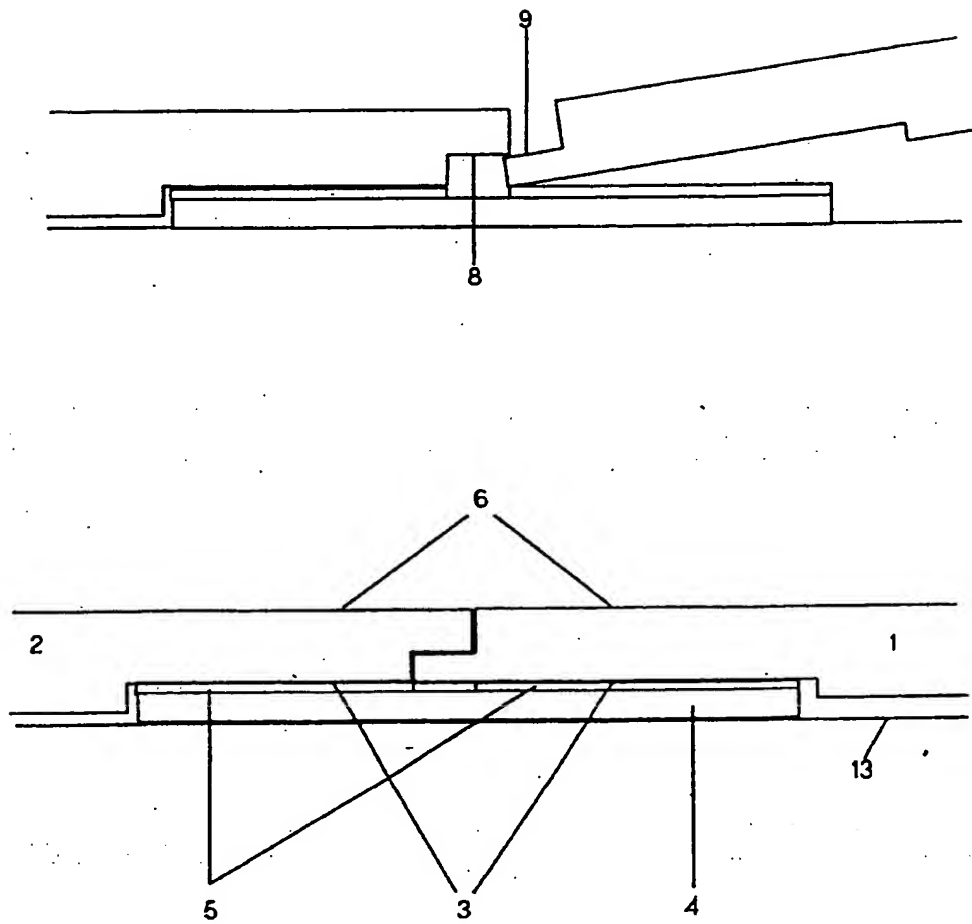
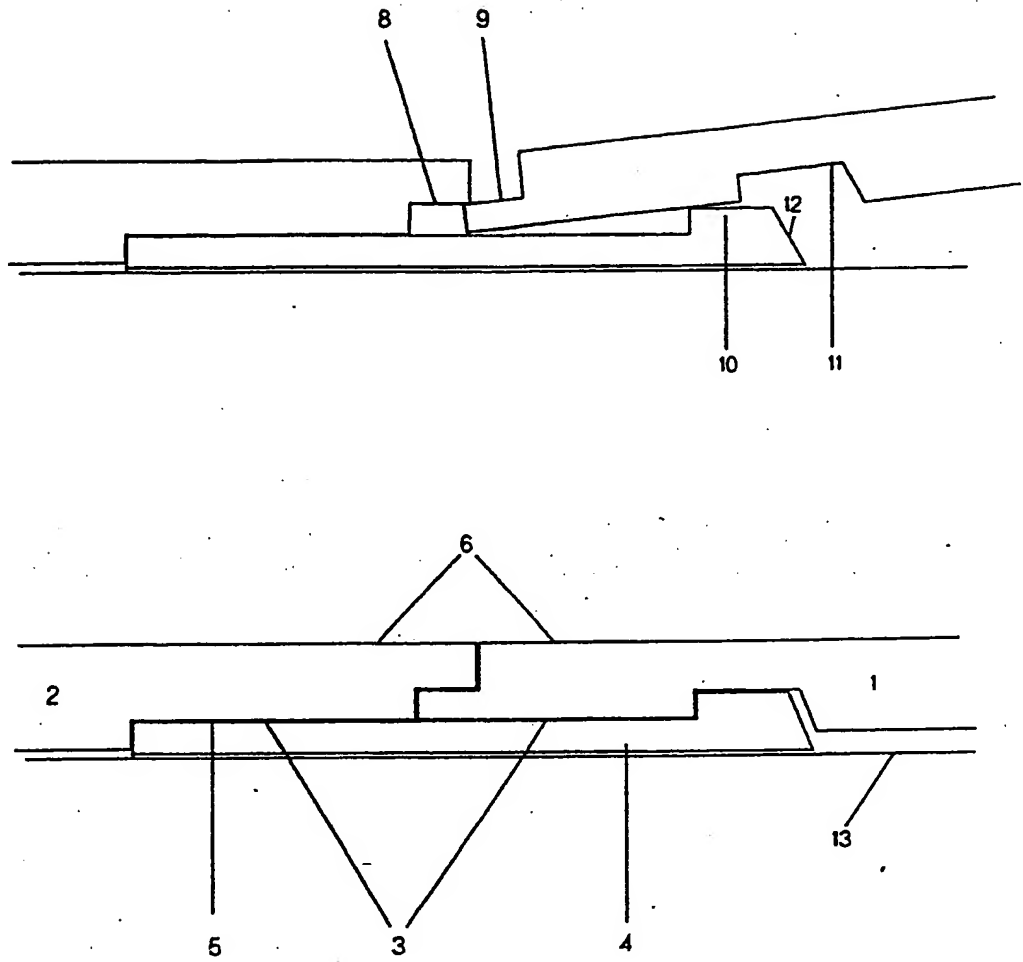


FIG 5





☐ EPA/EPO/OEB  
D-80298 München  
☎ +49 89 2399-0  
TX 523 656 epmu d  
FAX +49 89 2399-4465

Europäisches  
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Patent Office

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des brevets

Direction Générale 2

Giver, Sören Bo  
Awapatent AB,  
P.O. Box 5117  
200 71 Malmö  
SUEDE

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1999-03-26

AWAPATENT, Malmö

**Telephone Numbers:**

Primary Examiner (+49-89) 2399-2486  
(substantive examination)

Formalities Officer / Assistant (+49-89) 2399-2438  
(Formalities and other matters)



Application No. 98 106 535.2-2303	Ref. 2980609	Date 24. 03. 99
Applicant Välinge Aluminium AB		

Communication pursuant to Article 96(2) and Rule 51(2) EPC

The examination of the above-identified application has revealed that it does not meet the requirements of the European Patent Convention for the reasons enclosed herewith. If the deficiencies indicated are not rectified the application may be refused pursuant to Article 97(1) EPC.

You are invited to file your observations and insofar as the deficiencies are such as to be rectifiable, to correct the indicated deficiencies within a period

of 4 months

from the notification of this communication, this period being computed in accordance with Rules 78(3) and 83(2) and (4) EPC.

Amendments to the description, claims and drawings are to be filed where appropriate within the said period in three copies on separate sheets (Rule 36(1) EPC).

Failure to comply with this invitation in due time will result in the application being deemed to be withdrawn (Article 96(3) EPC).



PLUGGE H B  
Primary Examiner  
for the Examining Division

Enclosure(s): 3 page/s reasons (Form 2906)





## Bescheid/Protokoll (Anlage)

## Communication/Minutes (Annex)

## Notification/Procès-verbal (Annexe)

Datum  
Date  
Date

24.03.99

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Anmelde-Nr.:  
Application No.:  
Demande n°: 98 106 535.2

The examination is being carried out on the following application documents:

Text for the Contracting States:

AT BE CH LI DE DK ES FR GB GR IE IT LU MC NL PT SE

**Description, pages:**

1-19 as originally filed

**Claims, No.:**

1-15 as originally filed

**Drawings, sheets:**

1-6 as originally filed

1. The application, a divisional application stemming from parent application EP0698162, appears to introduce subject-matter which extends beyond the content of the (parent) application as filed, contrary to Article 123(2) EPC.

Claims 10 to 15 are directed to a **method for producing a floor**, whereas the original application disclosed no such method. Furthermore, the method claims in the present (divisional) application are not drafted in terms of method steps, but in terms of the technical features of the panel and the method of installation. It is submitted that the subject matter for which protection was originally sought comprises not a method of manufacture, but rather the panel per se and the method of laying.

Claims 10 to 15 ought therefore to be deleted from the application, as well as the text in the description pertaining to the method of manufacture.

2. The examiner questions whether there is support in the original filing for the subject matter of claim 2. The laying method claimed in claim 1 appears to be that illustrated in the figures. The applicant is invited to indicate the support in the parent application for the variant of laying the panels as claimed in claim 2.

In the event that that support can be established, it is suggested, for reasons of clarity, that claims 1 and 2 be combined using the either/or formulation. This would assist the reader in establishing the scope of the two very similar embodiments.



3. In the originally filed claim 1, it was stated that the panels, when joined together, have play so as to be able to occupy a relative position in the "second" direction. This feature is not claimed in the present claim 1 (and claim 2).

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+  
movement

The applicant is requested to state his position with regard to contravention of the requirements of Article 123(2) EPC. As there is no disclosure in the originally filed application that this feature is not an essential feature, it should be included in claim 1 (and claim 2).

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be  
applied

4. In respect of clarity (article 84 EPC) the following wording in claim 1 (and claim 2) should be addressed:

- The wording, in lines 11 to 13, "... each locking strip being integrated with the panel as a separate element connected to the panel or as an extension of a lower part ..." should be amended to read "... each locking strip being either a separate element connected to the panel or an extension of a lower part ..." to make the intended limitation clear.
- If the **first direction** (D1) is defined as being at right angles to the principal plane of the panels, and a **second direction** (D2) as being parallel to said principal plane and at right angles to the locked **long edges**, then the definition of another **second direction** (D2) being parallel to said principal plane and at right angles to the **short edges** (toward the end of the claim) leads to a lack of clarity. It is proposed that the latter reference to a second direction be changed to a third direction D3, being perpendicular to directions D1 and D2.
- The wording "... and being provided with a projecting locking element, and (ii) a locking groove at an opposite long edge and at an opposite short edge, each locking groove extending parallel to and spaced from the corresponding edge and being open at a rear side of the panel ..." is unclear. The shape of the projections and grooves needs to be more clearly defined to make the intended limitation clear. Without such a clarification, the subsequent method steps are indeterminate.

CLAR

CLAR

**Bescheld/Protokoll (Anlage)**Datum  
Date  
Date

24.03.99

**Communication/Minutes (Annex)**Blatt  
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**Notification/Procès-verbal (Annexe)**Anmelde-Nr.:  
Application No.:  
Demande n°:

98 106 535.2

The applicant is requested to file amended claims which take the above comments into account.

5. The translation of the priority document for the parent application filed with the EPO on 8.7.1998, and the priority document itself, filed with WIPO on 16.6.1994, contain indecipherable drawings. As the content of the present application appears to go beyond the disclosure of the priority document, at least insofar as the text is concerned, the applicant is requested to file clear copies of the drawings filed with the priority filing SE9301595-6.

It should be noted that the document WO-A-9313280 is prior art in respect of the subject matter of the present application for which no priority rights can be accorded. The applicant is requested to take account of this document when redrafting the claims.

6. Reference signs in parentheses should be inserted in the claims to increase their intelligibility, Rule 29(7) EPC. This applies to both the preamble and characterising portion (see the Guidelines, C-III, 4.11).
7. The applicant is requested to file amendments taking the above comments into account.



✉ EPA/EPO/OEB  
D-80298 München  
☎ 089/2399-0  
TX 523 656 apmu d  
FAX 089/2399-4465

Europäisches  
Patentamt

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Patent Office

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Generaldirektion 2

Directorate General 2

Direction Générale 2

Giver, Sören Bo  
Awapatent AB,  
P.O. Box 5117  
200 71 Malmö  
SUEDE

RECEIVED

1999-03-15

AWAPATENT, Malmö

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1999-03-16

AWAPATENT, Malmö

Datum/Date

12.03.99

An/Ref./RM. 2980609	Anmeldung Nr./Application No./Demande n°/Patent Nr./Patent No./Brevet n°. 98106535.2-2303/0855482
Anmelder/Applicant/Demandeur/Patentinhaber/Proprietor/Titulaire Välinge Aluminium AB	

COMMUNICATION PURSUANT TO ARTICLE 115(2) EPC

Please find enclosed observations by a third party concerning the patentability of the invention of the above-mentioned patent application. That person is not a party to the proceedings before the EPO (Art. 115(1) EPC).

Under Article 115(2) EPC you may comment on the observations.

Formalities Officer  
Tel. No. 089/2399 -

2449

Ursula Meyn-Khatami

**BUREAU M.F.J. BOCKSTAEL** N.V.S.A.

BELGIE • ARENBERGSTRAAT 13 • B-2000 ANTWERPEN • BELGIQUE

OPZOEKINGEN	-	BREVETS
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	-	LICENCES
	-	RECHERCHES
	-	AVIS

TEL. +32 (0) 3 225 00 60 (4L.) • FAX +32 (0) 3 233 71 62 & +32 (0) 3 226 90 57  
e-mail: bockstael@skynet.be

**AANGETEKEND**

EUROPEAN PATENT OFFICE  
ERHARDTSTRASSE 27

D-80298 MÜNCHEN  
DUITSLAND

U/V Ref.:

O/N Ref.: A.14367

MB/sh

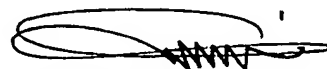
9 February 1999

Dear Sirs,

re: European patent application No. 98106535.2 (publ.No. 0.855.482)  
in the name of: VÄLINGE ALUMINIUM AB. 2303

We refer to your letter of 18 January 1999 and enclose herewith a copy of the observation under article 115 EPC, as well as copies of the opposition documents filed (in English).

Yours faithfully.



E. Donn  M.Sc.  
European Patent Attorney

Encl.



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D97873F  
BUREAU M.F.J. BOCKSTAEI N.V.  
Arenbergstraat 13  
B-2000 ANTWERPEN  
Tel. : 03 / 225.00.60  
Fax.: 03 / 233.71.62

\* DUPLIKATA - (W) \*

Bureau M.F.J. Bockstael nv

**COPY**

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EUROPEAN PATENT OFFICE  
ERHARDTSTRASSE 27

D-80298

MÜNCHEN  
DUITSLAND

A.13586  
GV/sr

7 October 1997

Dear Sirs,

re: European patent application no 94915725 (Publ.No 0.698.162).  
in the name of : VALINGE ALUMINIUM AB.

---

Under article 115 EPC, we present following observations, regarding the above mentioned application.

In the reply of the applicant dated 26 June 1997, (in response to the first examination report of 7 May 1997) the applicant filed a primary and a secondary request of new claims.

Claim 1 of the primary request, the scope of which is larger than the scope of the originally filed claim 1, is based on the assertion by the applicant that the feature that two panels engaged into each other can mutually be displaced in their longitudinal direction is new (citation: "... the mutual displacement of the panels in the direction of the joint edges is an essential feature of the invention...").

We would like to draw the Examiner's attention to the fact that the feature that the panels can be mutually displaced in longitudinal direction, is common technology for as long as flooring panels (provided with tongue and groove) exist.

./.

Indeed, as shown in enclosure 1, when engaging a flooring panel A with already installed flooring panels B and C, the flooring panel A is first coupled to the flooring panels B (tongue and groove are coupled), and subsequently the flooring panel A, in coupled condition, is moved to flooring panel C, as shown by arrow F, e.g. by exerting a force on the end E by means of a hammer.

It is clear that in practice it is never possible to couple flooring panel A to flooring panel B directly from the beginning closely to the flooring panel C.

It is clear that this technique already exists as long as flooring panels exist which are provided with tongue and groove.

\*  
\* \*

Also the document WO 93/13280, which was cited in the search report of the abovesaid European patent application, clearly discloses panels which in coupled condition can be mutually displaced in longitudinal direction. Indeed, as shown in the drawings and as described in the text of WO 93/13280, the legs 2-3 fit into "SLOTS" 14-15, which means that there is no obstruction which can hinder a mutual displacement of two coupled panels in the longitudinal direction. Indeed, when for example exerting a force in longitudinal direction on the panel 13, this panel 13 will be displaced in that direction, whereby it is sliding with the slot 15 over the leg 3.

That a mutual displacement between the two panels of JUNKERS (WO 93/13280) MUST be possible is also clear when taking in account their commercialised product. Hereto we enclose photographs of this product (photographs 1 to 5 of enclosure 2), as well as drawings (enclosures 3 and 4) which are prepared from enlargements of photographs 1 and 2.

./.

From this commercialised product, it is clear that the flooring panels of JUNCKERS are provided with tongue and groove at the longitudinal edges as well as at the short edges. As tongues and grooves are provided at both, longitudinal and short edges, it is clear that the panels of JUNCKERS can only be coupled to each other by first engaging the longitudinal edges of two adjacent panels and subsequently displacing the last coupled panel in longitudinal direction, in order to obtain that also the coupling at the shorter edges becomes realised. It is clear that the coupling of the panels at the short edges should not be possible when the panels cannot be moved in longitudinal direction.

It should also be noted that, after having provided the flooring board of JUNCKERS with a plate-shaped body 1 as disclosed in WO 93/13280, (see also photograph 1), a structure is obtained which shows all features of claim 1 of the primary request.

For the reasons explained above, we are of the opinion that at least claim 1 of the primary request does not fulfill the requirements of article 54 EPC.

It is respectfully requested that the Examiner handling the European patent application no 94915725 should take in consideration the above comments.

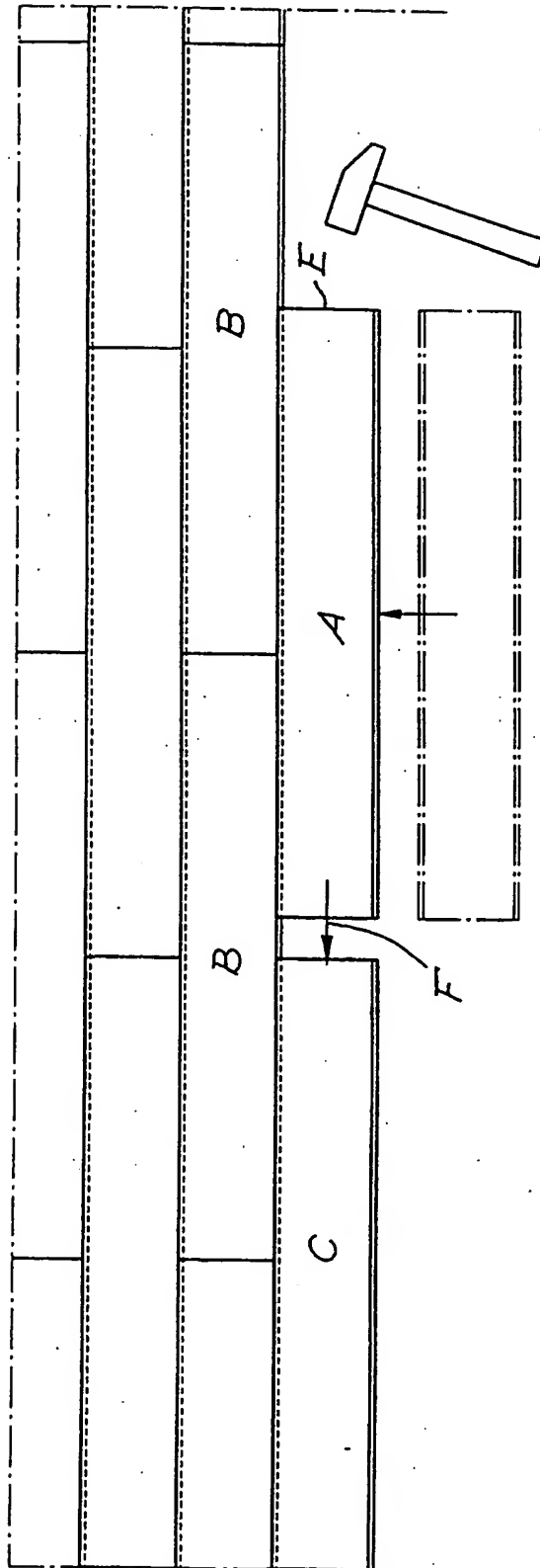
Yours faithfully.

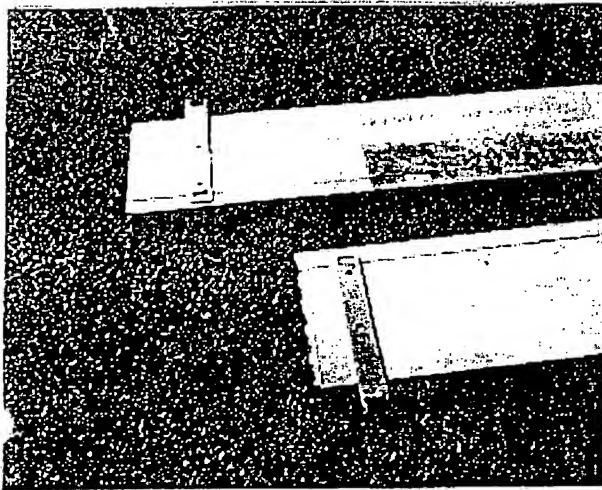


A.O. E. Donné M.Sc.  
European Patent Attorney

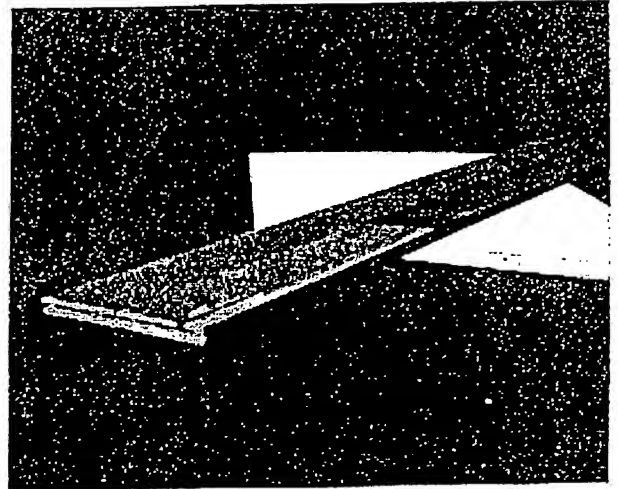
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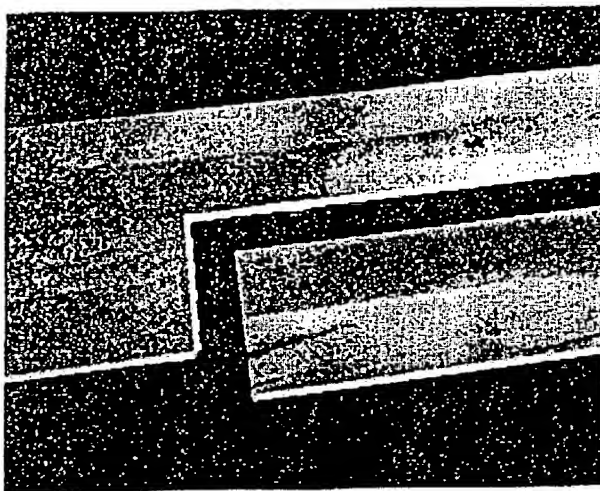




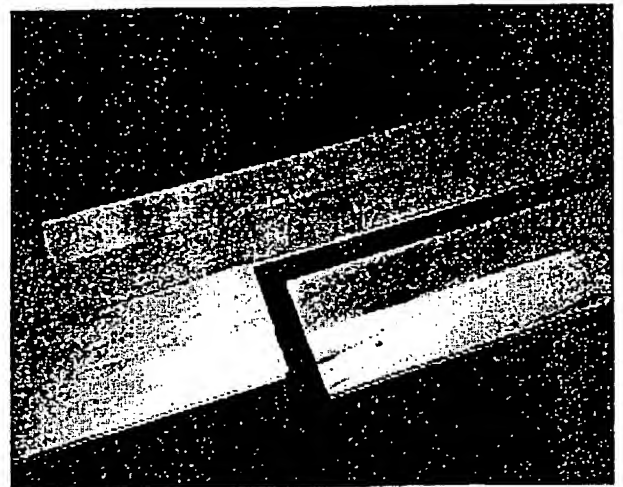
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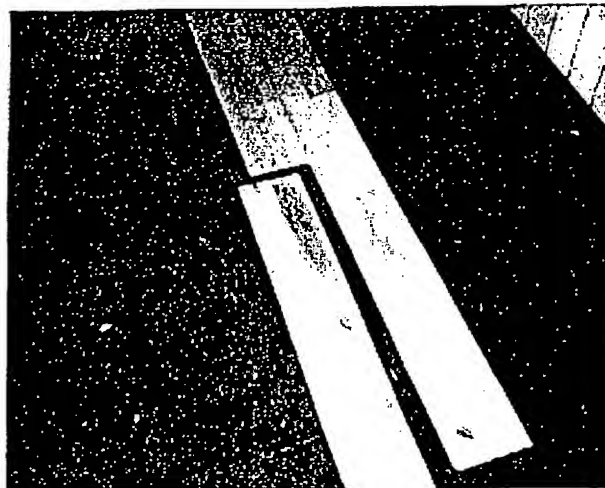
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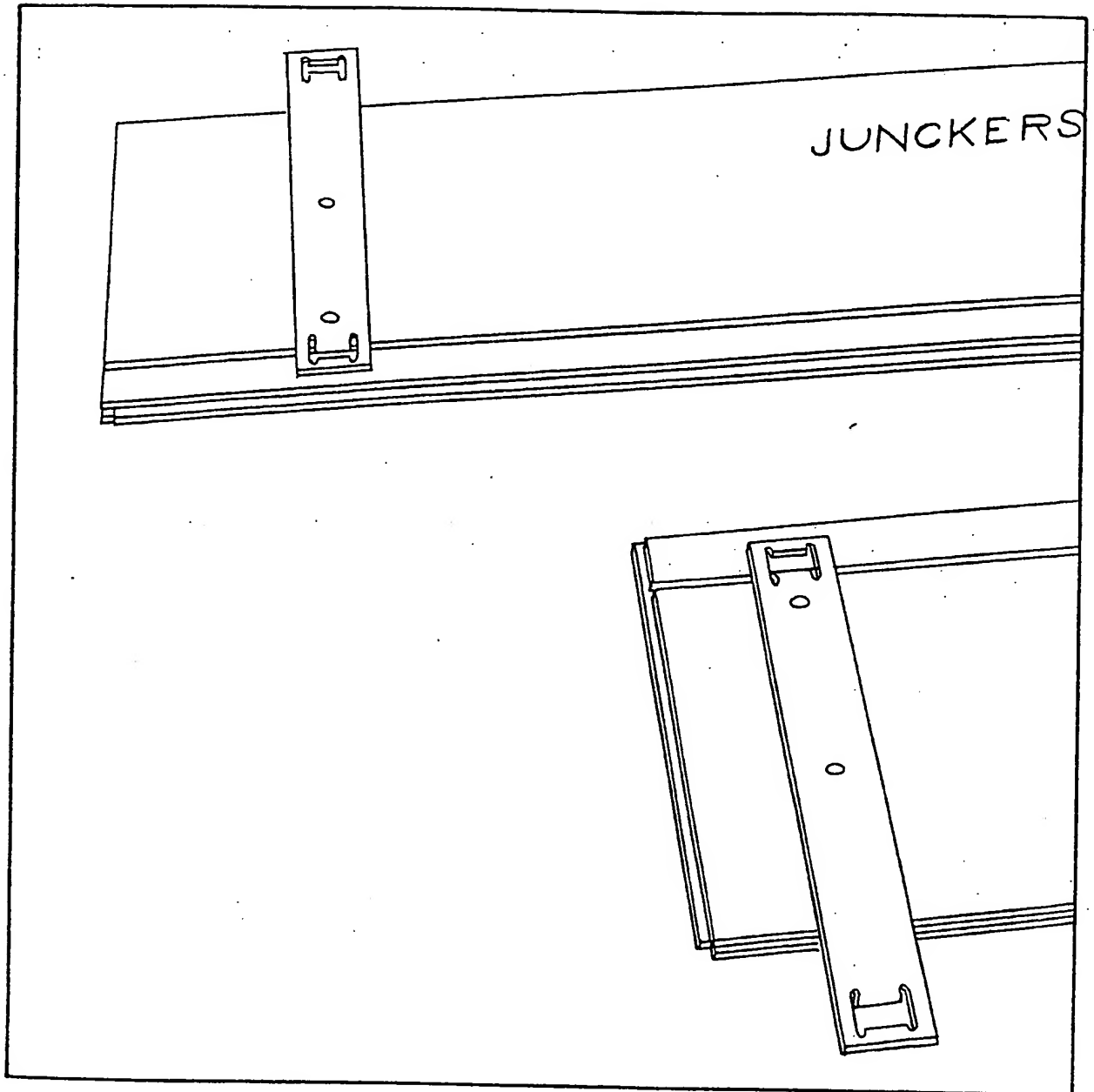
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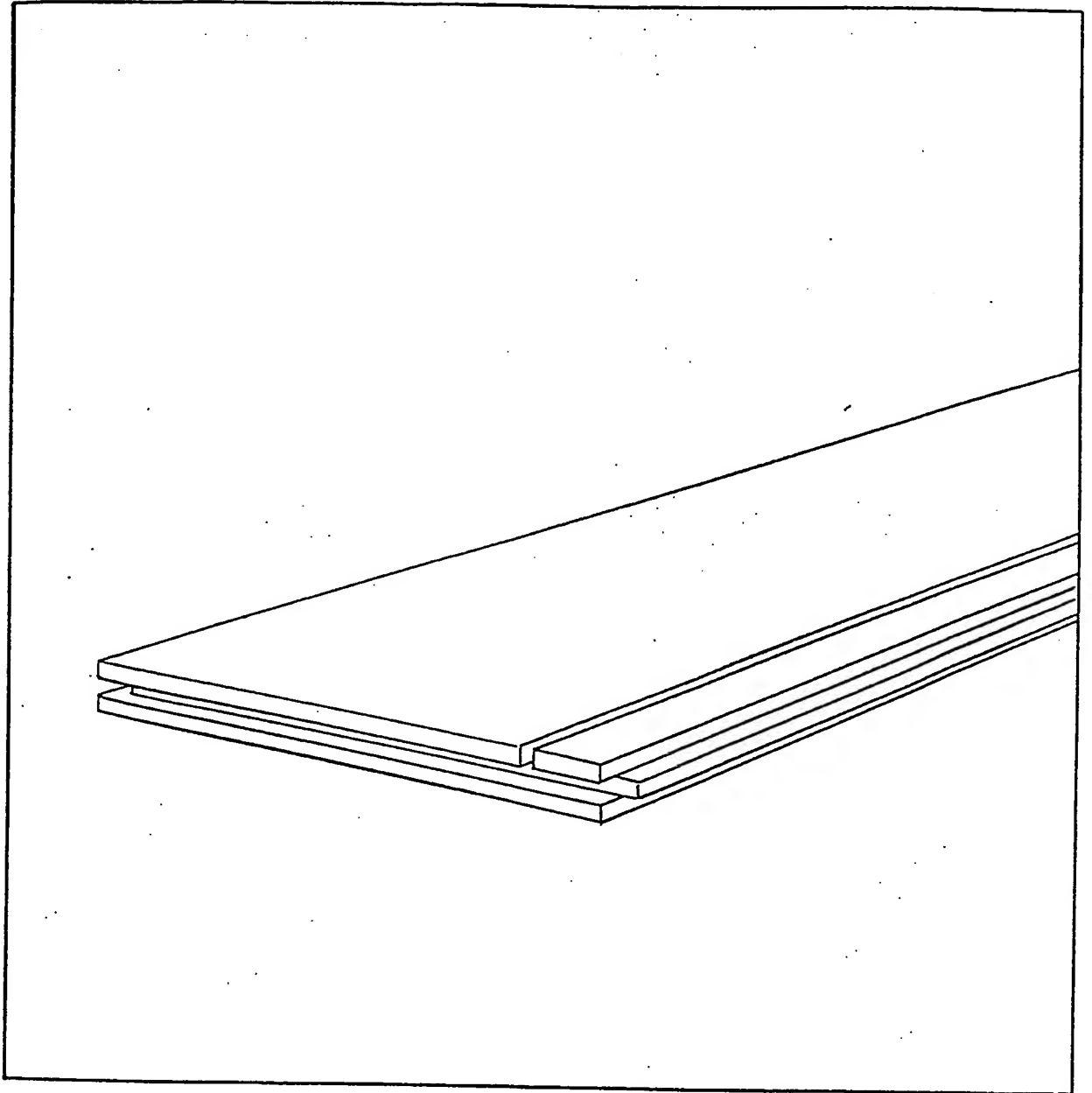


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**BUREAU M.F.J. BOCKSTAEL**

BELGIE • ARENBERGSTRAAAT 13 • B-2000 ANTWERPEN • BELGIE

N.V.S.A.

OCTROOIEN	•	BREVETS
MERKEN	•	MARQUES
MODELLEN	•	MODELES
LICENTIES	•	LICENCES
OPZOEKINGEN	•	RECHERCHES
ADVIEZEN	•	AVIS

TEL. +32 (0) 3 225 00 60 (4L.) • FAX +32 (0) 3 233 71 62 & +32 (0) 3 226 90 57  
 BUREAU M.F.J. BOCKSTAEL N.V. • e-mail: bockstael@skynet.be

Arenbergstraat 13  
 B-2000 ANTWERPEN  
 Tel.: 03 / 225.00.60  
 Fax.: 03 / 233.71.62

EUROPEAN PATENT OFFICE  
 ERHARDTSTRASSE 27

D-80298 MÜNCHEN  
 DUISLAND

U/V Ref.:

O/N Ref.: A.13586

GV/mb

24 April 1998

Dear Sirs,

re: European patent application No. 94915725.9 (Publ.No. 0.698.162)  
 in the name of: VÄLINGE ALUMINIUM AB.

Under art. 115 EPC, we wish to file following observations, regarding  
 the above mentioned European patent application.

These observations consist, on the one hand, of a reaction to the  
 letter of the representative of VÄLINGE ALUMINIUM AB dated 23 February  
 1998, and, on the other hand, of observations relating to art.123 EPC.

\*  
 \* \*

Observations regarding the letter dated 23 February 1998.

In his letter of reply, the representative of the applicant tries to  
 explain that the wording of claim 1 of the secondary request in fact  
 covers the same subject-matter as claim 1 of the main request. This  
 means that the representative of the applicant is of the opinion that  
 both the embodiments showing a definite play, and the embodiments  
 showing no play are covered by claim 1 of the main request.

./.



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More particularly, the representative of applicant now tries to explain that the word "can" in the expression "the panels, when joined together, can occupy a relative position in said second direction where a play exists between...", means that the play can or cannot exist. In our opinion this is a clear misinterpretation of claim 1 with the intention to enlarge the scope of this claim.

In fact the word "can" refers to the word "occupy" and not to the word "exists".

The expression "where a play exists" in fact means "whereby a play exists", which means that there is always a play. Due to the presence of the play the panels "can" occupy a relative position, which means that they "have the possibility" to occupy different positions.

It is clear that the statement of the representative of the applicant renders the wording of claim 1 of the secondary request unclear. We do understand that we cannot intervene in the proceedings at this time, but it is expected that in case that a patent should be granted, claim 1 should be formulated in a clear and concise manner, as required by art. 84 EPC and that ambiguous terms are excluded, by clearly stating the existence of the play.

Furthermore, we would like to draw the attention of the Examiner to the fact that the statement "... the invention as defined in claim 1 differs also in other aspects from the closest prior art." (see letter of 23 February 1998 of the representative of the applicant, third paragraph of page 2) seems in contradiction with the statement of the representative's letter of 26 June 1997, second paragraph of second page, in which it is said that the limitation that the panels can occupy a relative position in said second direction was introduced in order to distinguish the invention from prior art spring clips (SE 450.141).

Furthermore, we would also like to draw the attention of the Examiner to the fact that, as explained further on, there is a clear difference between the expressions "integrated" and "integrally", and that the statement of the representative of the applicant on page 3, second paragraph, in which it is said that "integrated" means either fixedly connected to the panel, or integrally formed with the panel, is not correct.

Regarding the possibility to mutually displace coupled boards in the direction of the joint edges (see second full paragraph on page 3 of the representative's letter dated 23 February 1998), it should be noted that such feature is clearly disclosed in GB 1.430.423, page 3 lines 10-15. Hereby it should also be noted that the joint structure shown in GB 1.430.423, apart from the fact that no separate strip and no play are used, is identical to the joint structure proposed in EP 0.698.162. This is very clear when turning figure 2 of GB 1.430.423 upside down.

Regarding the joint structure disclosed in GB 1.430.423, it is clear that this structure also provides in a locking action in two directions. This is described word for word on page 2, lines 105-113.

Important is also to note that the members 10 and 11 of GB 1.430.423 can be released again, as described on page 2, lines 29-31. It is obvious that to release the members 10 and 11 from each other, this will also be done by turning one member angularly away from the other panel, similar as disclosed in the last paragraph of claim 1 of the secondary request.

\*  
\*   \*

Observations relating to art. 84 EPC and art.123 EPC.

Claim 14 is added during the proceedings and claims that the strip 6 is integrally formed with the strip panel 8, i.e. made in one piece with the strip panel 1.

This claim 14 depends on claims 1-4.

We would like to draw the attention of the Examiner to the fact that the embodiment in which the strip 6 is integrally formed with the strip panel 8 is described in conjunction with the use of the separate strip 74 (see description page 17, line 36 to page 18, line 17, as well as figure 5).

The description does not comprise a clear indication that the invention also relates to panels, having a strip 6 which is integrally formed with the panel, and in which the strip 74 is omitted. Consequently, present claim 14, as being dependent on claims 1-4, relates to subject-matter which extends beyond the content of the application as filed, and therefore in our opinion does not comply with art.123 EPC.

In fact claim 14 was added after the applicant noticed that competitors were manufacturing flooring panels having a strip portion which is formed in one piece with the panel and which were not provided with the strip 74.

Moreover, with respect to the above said, we also would like to draw the attention of the Examiner to the fact that the main object of the invention described in EP 0.698.162 substantially consists in providing a system for joining together building panels whereby the strength of the joint is no longer limited by the strength of the material of the panel itself or, vice versa, whereby the minimum thickness of the panel is no longer limited by requirements necessary to realise coupling portions at the edges (see objects and problems to be solved described in the introduction of the application, for instance page 4, lines 3-10 and page 5, lines 14-199). In other words EP 0.698.162 aims a solution to the problem that connections by means of a normal tongue and groove connection provided in the panel itself are not sufficiently strong and in certain applications impossible to produce.

According to the solution proposed in EP 0.698.162 this problem is solved either by using a separate strip 6 fixed to the panel, or by using a strip 6 which is in one piece with the panel but which in that case is provided with an additional strip 74. These strips 6-74 provide in a strong coupling portion.

It is clear that if in the embodiment of figure 5 the strip 74 is omitted, the posed problem is no longer solved. Consequently, also for this reason, an embodiment similar to the one in figure 5 but without the strip 74 is in our opinion not within the content of the application as filed.

In fact the strip 74 in the embodiment of figure 5 is provided to solve the same problems as these which are solved with the strip 6 in the other shown embodiments (this is clear from the description, especially from lines 7 to 9 on page 18, in which it is stated that the strip 74



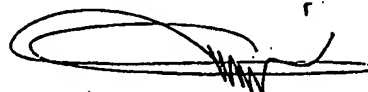
has "a width covering approximately the same surface as the separate strip 6 of the previous embodiments"). When the strip 74 is omitted, said problems are no longer solved, and the resulting embodiments are no longer within the scope of the invention.

Furthermore, added claim 14 is in our opinion not clear (art. 84 EPC) as the subject-matter of claim 14 is in contradiction with the subject-matter of claim 1 from which it depends. In claim 1 it is stated that the strip 6 is "integrated" with the panel, which means that the strip 6 consists of a separate element fixed to the panel (according to the Webster's dictionary "integrated" means "composed of separate parts united together to form a more complete entity"). In the added claim 14, it is said that the strip is "integrally" formed with the panel, which according to the applicant means that it is made in one piece. In our opinion, the term "integrally" is opposite to "integrated", and therefore claim 14 is not clear in that it refers to claims 1 to 4.

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It is respectfully requested that the Examiner handling the European patent application No. 94915725.9 should take in consideration the above formulated observations.

Yours faithfully.



E. Donné M.Sc.  
European Patent Attorney

D07873F  
BUREAU M.F.J. BOCKSTAEL N.V.  
Arenbergstraat 13  
B-2000 ANTWERPEN  
Tel. : 03 / 225.00.60  
Fax.: 03 / 233.71.62

\* DUPLIKATA

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Bureau M.F.J. Bockstael nv

URGENT

EUROPEAN PATENT OFFICE  
ERHARDTSTRASSE 27

D-80298

MÜNCHEN  
DUITSLAND

A.13568  
GV/ec

19 December 1997

Dear Sirs,

re: European patent application No 94915725.9 (Publ.No. 0.698.162)  
in the name of: VÄLINGE ALUMINIUM AB.

---

Under article 115 EPC, we wish to file following observations,  
regarding the above mentioned European patent application.

\*  
\* \*

Claim 1 :

With respect to claim 1 ("second request") we would like to draw the attention of the Examiner to the prior-art document GB 2.256.023, of which we enclose herewith a copy. We also enclose an additional copy of figures 4 and 5 of this document, on which several indications have been made.

First of all, GB 2.256.023, page 1, second paragraph, discloses a joint which can be used for flooring. Consequently, this document clearly relates to the same technical field as the European patent application No. 94915725.9.

. / .

Secondly, it is clear that the joint disclosed in GB 2.256.023 also provides in first and second mechanical connections as claimed in the European patent application No. 94915725.9.

More particularly, as indicated on the enclosed copy of figure 4, the joint of GB 2.256.023 discloses the use of a strip S, which projects on the rear side of a second panel 1' and which is provided with a locking element L (formed by side edge 17b), whereby this locking element is received in a locking groove G at the rear side of said panel 1'. Hereby the locking groove G consists in the recess bordered by the rib 10, on the one hand, and the lower side edge face 11b, on the other hand.

Furthermore, the panels 1 and 1', when joined together, can also occupy a relative position in the direction D2, similar as in the European patent application No. 94915725. More particularly, as indicated on the enclosed additional copy of figures 4 and 5, the joint of GB 2.256.023 clearly shows the "play" claimed in claim 1 of the "second request".

From the aforesaid, it is clear that all features of claim 1 are known from the British patent No. 2.256.023 and consequently the subject-matter of this claim is not new.

\*  
\* \*

With respect to the dependent claims of EP 94915725.9 we would like to draw the attention of the Examiner to the above-mentioned British patent No. 2.256.023, as well as to following documents:

- US 3.310.919 -
- US 3.694.983 -
- US 3.859.000 -
- GB 424.057 -
- GB 1.430.423 -
- GB 2.117.813 -
- DE 2.502.992 -
- DE 3.041.781 .
- CH 200.949 .
- FR 2.568.295 -
- WO 9.313.280

Copies of the abstracts and/or most relevant pages of the above-listed documents are enclosed.

Claim 2:

From figure 4 of GB 2.256.023 one can clearly see that when two panels are pressed against each other and when subsequently panel 1' is turned angularly away from the strip S, the locking element can leave the locking groove G without contacting the locking surface 17b.

Consequently, for this reason, also the subject-matter of claim 2 is not new.

Claim 3 :

As normally, panels as shown in GB 2.256.023 have a thickness which varies between approximately 8 mm and 2 cm, it is clear that the locking surface 17b is smaller than 2 mm. For this reason also claim 3 is anticipated by GB 2.256.023.

Claim 4 :

GB 2.256.023 discloses that the first mechanical connection is provided by a joint edge (tongue 5) of the first panel, which is engaged between the joint edge (upper lip above groove 6) and the front side of the strip S of the second panel. Therefore we believe that the subject-matter of claim 4 is not new.

Claim 5 :

The features of claim 5 that the strip is made of a material different from that of the panel and is fixedly mounted on the panel, are obvious taking into account that flooring panels provided with coupling strips of a material which differs from the material of the panel are already known from US 3.310.919, US 3.694.983 and US 3.859.000.

The feature of claim 5 can also be found in GB 2.117.813. As can be seen in the drawings of this document, the strips 12 and 13 are made of a different material than the plate 11. GB 2.117.813 relates to a wall panel. As the European patent application 94915725.9 relates to building panels, which means wall panels as well as flooring panels, GB 2.117.813 is in the same technical field.

Claim 6 :

The feature of claim 6 that such strip 6 is received in a countersunk groove is also obvious, taking into account that the strips disclosed

in US 3.310.919, US 3.694.983 and US 3.859.000 show also parts which are countersunk in the lower side of the panel.

Claim 9 :

The feature of claim 9 that the strip 6 is fixed to the strip panel 1 by means of a mechanical connection is also known of the above said three American patents, namely US 3.310.919, US 3.694.983 and US 3.859.000, as the strips are also fixedly mounted to the panels.

Claims 10 and 11 :

Using lips or the like which are bent or punched in order to realise a mechanical connection is a technique which is generally known for connecting elements to each other. The use of this technique in flooring panels is within the reach of persons skilled in the art.

According to our opinion, therefore claims 10 and 11 are not inventive.

Claim 12 :

Using a binder for connecting two parts to each other, in our opinion, offers no inventive step.

Claim 13 :

The feature of claim 13, stating that the strip is made of a flexible, preferably resilient material, such as sheet aluminium, is also obvious, as according to US 3.859.000 the strips are also made of a metallic material.

Claim 14 :

The feature that the strip 6 is integrally formed with the strip panel 1 is clearly known from the already mentioned document GB 2.256.023, and consequently is not new.

Furthermore the use of strips for coupling flooring panels, these strips being integral with the flooring panels, is generally known from GB 1.430.423, DE 25 02 992, CH 200.949, FR 2.568.295, DE 3.041.781 and GB 424.057.

Claim 15 :

The feature that the locking element consists in a locking edge extending continuously along the strip 6 is not new in view of the joint disclosed in GB 2.256.023. In the latter the locking edge is formed by edge 17b.

Furthermore, the use of continuous locking edges in flooring panels are generally known from GB 1.430.423, DE 25 02 992, CH 200.949, FR 2.568.295, DE 3.041.781 and GB 424.057.

Claim 16 :

The use of spaced apart locking elements is obvious taking in account the teachings of document WO 9313280 (cited in the international search report of the application in question). This document clearly shows that spaced apart elements can be used to couple flooring panels.

Claim 17 :

Claim 17 in fact states that each of the four edges of the panel is provided with a coupling element of the claimed coupling system.

This feature is obvious and not inventive, taking into account that it is generally known to provide flooring panels at each of the four edges with coupling means. Hereto we refer to the drawings of the panels disclosed in GB 424.057, FR 2.568.295 and CH 200.949.

Claim 18 :

The feature to fix an underlay to the rear side of the panel is known of FR 2.568.295. Figure 3 clearly shows the use of such underlay 44.

Claim 19 :

The feature of claim 19, stating that the underlay is fixed so as to cover this strip at least up to the locking element 8 is clearly anticipated by figure 3 of FR 2.568.295. In this figure 3, it can clearly be seen that the underlay 44 covers this strip up to the locking element (languette 31).

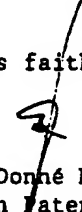
Claim 20 :

The use of a sealing strip is not inventive, as the use of a similar strip is already known from document GB 2.117.813 (beads 30 and 31).

\*  
\* \*

It is respectfully requested that the Examiner handling the European patent application No 94915725.9 should take in consideration the above comments.

Yours faithfully.

  
E. Donné M.Sc.  
European Patent Attorney

Encl.: 46 numbered pages.

**BUREAU M.F.J. BOCKSTAEL**

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BELGIE

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MANDATAIRES AGREESURGENTEUROPEAN PATENT OFFICE  
ERHARDTSTRASSE 27D-80298 MÜNCHEN  
DUITSLAND

UN Ref.:

ON Ref.: A.13568

GV/ec

**COPY**

19 December 1997

Dear Sirs,

re: European patent application No 94915725.9 (Publ.No. 0.698.162)  
in the name of: VÄLINGE ALUMINIUM AB.Under article 115 EPC, we wish to file following observations,  
regarding the above mentioned European patent application.\*  
\* \*Claim 1 :

With respect to claim 1 ("second request") we would like to draw the attention of the Examiner to the prior-art document GB 2.256.023, of which we enclose herewith a copy. We also enclose an additional copy of figures 4 and 5 of this document, on which several indications have been made.

First of all, GB 2.256.023, page 1, second paragraph, discloses a joint which can be used for flooring. Consequently, this document clearly relates to the same technical field as the European patent application No. 94915725.9.

./.



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Secondly, it is clear that the joint disclosed in GB 2.256.023 also provides in first and second mechanical connections as claimed in the European patent application No. 94915725.9.

More particularly, as indicated on the enclosed copy of figure 4, the joint of GB 2.256.023 discloses the use of a strip S, which projects on the rear side of a second panel 1' and which is provided with a locking element L (formed by side edge 17b), whereby this locking element is received in a locking groove G at the rear side of said panel 1'. Hereby the locking groove G consists in the recess bordered by the rib 10, on the one hand, and the lower side edge face 11b, on the other hand.

Furthermore, the panels 1 and 1', when joined together, can also occupy a relative position in the direction D2, similar as in the European patent application No. 94915725. More particularly, as indicated on the enclosed additional copy of figures 4 and 5, the joint of GB 2.256.023 clearly shows the "play" claimed in claim 1 of the "second request".

From the aforesaid, it is clear that all features of claim 1 are known from the British patent No. 2.256.023 and consequently the subject-matter of this claim is not new.

\*  
\* \*

With respect to the dependent claims of EP 94915725.9 we would like to draw the attention of the Examiner to the above-mentioned British patent No. 2.256.023, as well as to following documents:

US 3.310.919  
US 3.694.983  
US 3.859.000  
GB 424.057  
GB 1.430.423  
GB 2.117.813  
DE 2.502.992  
DE 3.041.781  
CH 200.949  
FR 2.568.295  
WO 9.313.280

Copies of the abstracts and/or most relevant pages of the above-listed documents are enclosed.

Claim 2:

From figure 4 of GB 2.256.023 one can clearly see that when two panels are pressed against each other and when subsequently panel 1' is turned angularly away from the strip S, the locking element can leave the locking groove G without contacting the locking surface 17b.

Consequently, for this reason, also the subject-matter of claim 2 is not new.

Claim 3 :

As normally, panels as shown in GB 2.256.023 have a thickness which varies between approximately 8 mm and 2 cm, it is clear that the locking surface 17b is smaller than 2 mm. For this reason also claim 3 is anticipated by GB 2.256.023.

Claim 4 :

GB 2.256.023 discloses that the first mechanical connection is provided by a joint edge (tongue 5) of the first panel, which is engaged between the joint edge (upper lip above groove 6) and the front side of the strip S of the second panel. Therefore we believe that the subject-matter of claim 4 is not new.

Claim 5 :

The features of claim 5 that the strip is made of a material different from that of the panel and is fixedly mounted on the panel, are obvious taking into account that flooring panels provided with coupling strips of a material which differs from the material of the panel are already known from US 3.310.919, US 3.694.983 and US 3.859.000.

The feature of claim 5 can also be found in GB 2.117.813. As can be seen in the drawings of this document, the strips 12 and 13 are made of a different material than the plate 11. GB 2.117.813 relates to a wall panel. As the European patent application 94915725.9 relates to building panels, which means wall panels as well as flooring panels, GB 2.117.813 is in the same technical field.

Claim 6 :

The feature of claim 6 that such strip 6 is received in a countersunk groove is also obvious, taking into account that the strips disclosed

in US 3.310.919, US 3.694.983 and US 3.859.000 show also parts which are countersunk in the lower side of the panel.

Claim 9 :

The feature of claim 9 that the strip 6 is fixed to the strip panel 1 by means of a mechanical connection is also known of the above said three American patents, namely US 3.310.919, US 3.694.983 and US 3.859.000, as the strips are also fixedly mounted to the panels.

Claims 10 and 11 :

Using lips or the like which are bent or punched in order to realise a mechanical connection is a technique which is generally known for connecting elements to each other. The use of this technique in flooring panels is within the reach of persons skilled in the art.

According to our opinion, therefore claims 10 and 11 are not inventive.

Claim 12 :

Using a binder for connecting two parts to each other, in our opinion, offers no inventive step.

Claim 13 :

The feature of claim 13, stating that the strip is made of a flexible, preferably resilient material, such as sheet aluminium, is also obvious, as according to US 3.859.000 the strips are also made of a metallic material.

Claim 14 :

The feature that the strip 6 is integrally formed with the strip panel 1 is clearly known from the already mentioned document GB 2.256.023, and consequently is not new.

Furthermore the use of strips for coupling flooring panels, these strips being integral with the flooring panels, is generally known from GB 1.430.423, DE 25 02 992, CH 200.949, FR 2.568.295, DE 3.041.781 and GB 424.057.

Claim 15 :

The feature that the locking element consists in a locking edge extending continuously along the strip 6 is not new in view of the joint disclosed in GB 2.256.023. In the latter the locking edge is formed by edge 17b.

Furthermore, the use of continuous locking edges in flooring panels are generally known from GB 1.430.423, DE 25 02 992, CH 200.949, FR 2.568.295, DE 3.041.781 and GB 424.057.

Claim 16 :

The use of spaced apart locking elements is obvious taking in account the teachings of document WO 9313280 (cited in the international search report of the application in question). This document clearly shows that spaced apart elements can be used to couple flooring panels.

Claim 17 :

Claim 17 in fact states that each of the four edges of the panel is provided with a coupling element of the claimed coupling system.

This feature is obvious and not inventive, taking into account that it is generally known to provide flooring panels at each of the four edges with coupling means. Hereto we refer to the drawings of the panels disclosed in GB 424.057, FR 2.568.295 and CH 200.949.

Claim 18 :

The feature to fix an underlay to the rear side of the panel is known of FR 2.568.295. Figure 3 clearly shows the use of such underlay 44.

Claim 19 :

The feature of claim 19, stating that the underlay is fixed so as to cover this strip at least up to the locking element 8 is clearly anticipated by figure 3 of FR 2.568.295. In this figure 3, it can clearly be seen that the underlay 44 covers this strip up to the locking element (languette 31).

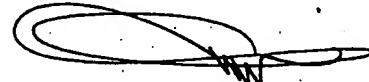
Claim 20 :

The use of a sealing strip is not inventive, as the use of a similar strip is already known from document GB 2.117.813 (beads 30 and 31).

\*  
\* \*

It is respectfully requested that the Examiner handling the European patent application No 94915725.9 should take in consideration the above comments.

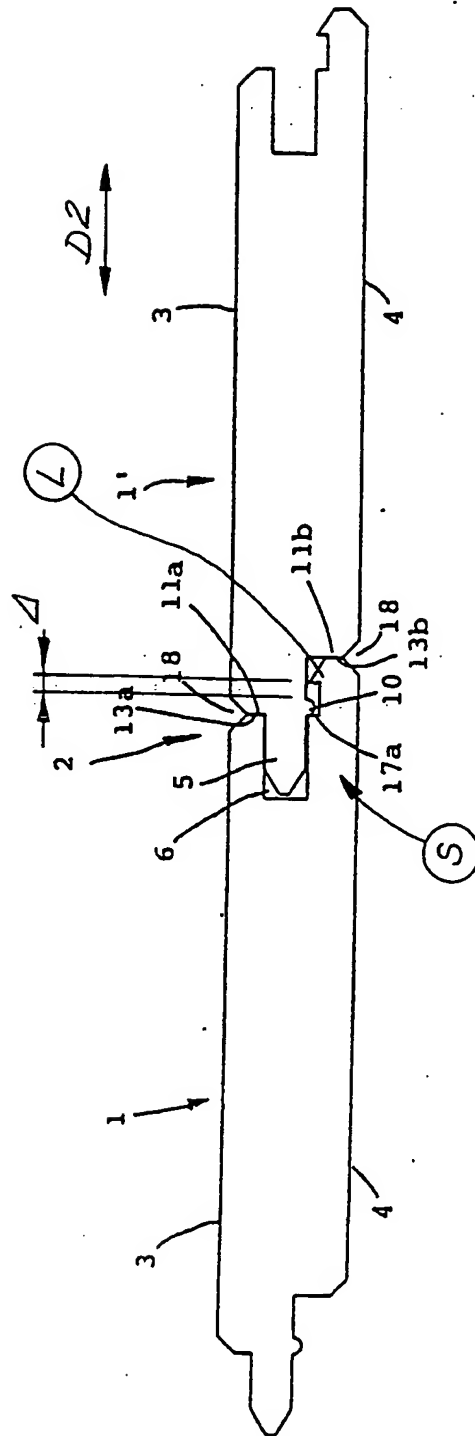
Yours faithfully.



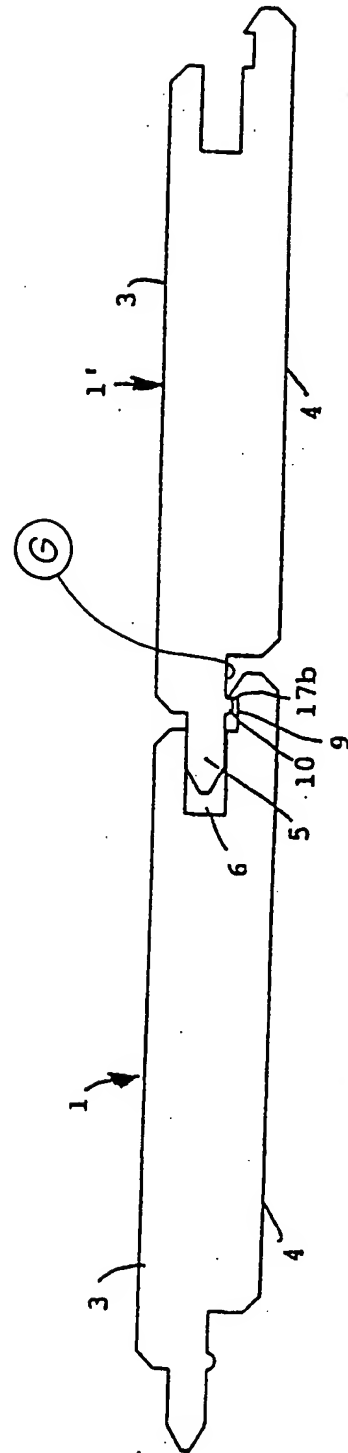
E. Donné M.Sc.  
European Patent Attorney

Encl.: 46 numbered pages.

4:7



**FIGURE 4.**



**FIGURE 5.**

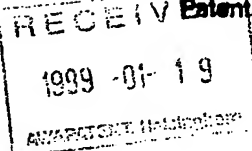


✉ EPA/EPO/OEB  
D-80298 München  
089 / 2399 - 0  
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Fax 089 / 2399 - 4485  
089 / 2399 - 4580

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Patenterteilungs-, Einspruchs- und Beschwerdeverfahren  
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Anschrift • Address • Adresse

AWAPATENT

Helsingborg, Sweden

Mr. S. Giver

Absender • Sender • Expéditeur

Name • Nom

Anschrift • Address • Adresse

Françoise IDE, Formalities

Tel: 089/2399-2449

Fax:

Bemerkungen • Remarks • Remarques

EP-application 98106535.2

As requested by telephone, please find attached a copy of the letter "observations by a third party" of 06/01/99.

The original letter with enclosures will be forwarded to you as soon as the enclosures have been received (see communication of 18/01/99).

19.01.99

Datum • Date

Unterschrift • Signature



EPA/EPO/OEB  
D-80299 München  
089/2399-0  
TX 623 666 epmu d  
FAX 089/2399-4465

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Direction Générale 2

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BUREAU M.F.J. BOCKSTAEL  
Arenbergstraat 13

B-2000 Antwerpen  
Belgique

Datum/Data

18.01.99

Zeichen/Ref./Réf.

2889699 A 14367 GV/sh

Anmeldung Nr./Application No./Demande n°/Patent Nr./Patent No./Brevet n°.

98106535.2-2303/0855482

Anmelder/Applicant/Demandeur/Patentinhaber/Propriétaire/Titulaire

Vödinge Aluminium AB

ACKNOWLEDGEMENT OF RECEIPT OF OBSERVATIONS BY THIRD PARTIES  
(Article 115 EPC)

I. Receipt of your letter dated ..06/01/99.....  
is hereby acknowledged.

Under Article 115(1) EPC you will not be a party to the  
proceedings before the European Patent Office.

II. In your letter the following documents are mentioned which were not  
enclosed, ~~and which are not available in the EPO:~~

Copies of the observations under Art. 115 EPC as well as  
copies of the opposition-documents filed in respect to the  
parent application 94915725.9.

You are asked to file copies of these documents within TWO MONTHS  
of notification of this communication if they are to be taken into  
account.

For the opposition/examining division  
Tel. No. 089/2399 - 2449

Françoise Ide



D07873F

# BUREAU M.F.J. BOCKSTAEL

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OPZOLKINGEN - RECHERCHES  
ADVIEZEN - AVIS

TEL +32 (0) 3 223 00 60 (4L) • FAX +32 (0) 3 233 71 62 & +32 (0) 3 226 80 57  
e-mail: bockstael@akynet.be

EUROPEAN PATENT OFFICE  
ERHARDTSTRASSE 27

D-80298 MÜNCHEN  
DUITSLAND

UN Ref:

ON Ref: A.14367  
GV/sh

6 January 1999

Dear Sirs,

re: European patent application No. 98106535.2 (publ.No. 0.855.482)  
in the name of: VALINGE ALUMINIUM AB.

Under article 115 EPC, we would like to file following observations  
regarding the above-mentioned European patent application.

The European patent application No. 98106535.2 comprises four  
independent claims, respectively claims 1, 2, 10 and 11. These claims  
relate to a method for laying and joining building panels and a method  
for producing a floor.

The contents of the parent European patent application No. 94913723.9  
is clearly restricted to flooring panels having a strip 6 provided with  
a projecting locking element 8 fitting in a locking groove 14, whereby  
between the locking surfaces of the locking element and the groove  
there exists a clear play (Delta).  
The examiner who is treating the parent patent application clearly  
stated that, according to the content of this parent application, the  
existence of the play is an essential feature which could not be  
deleted from the claims.

1807

2.

The claims of the divisional application No. 98106535.2 do not mention the presence of such play.

Therefore, in our opinion, the subject matter of the divisional application goes beyond the content of the application as originally filed, and consequently does not comply with article 123(2) EPC.

\*  
\* \*

Secondly it is respectfully requested that the examiner should take into consideration the observations which already have been filed under article 115 EPC in respect to the parent application as well as with the arguments and documents mentioned in the opposition which was filed on 4 January 1999 in respect to EP 0.698.162.

n° of parent appl. = 94915725.9

Yours faithfully.

E. Donné M.Sc.  
European Patent Attorney.

TIPA01

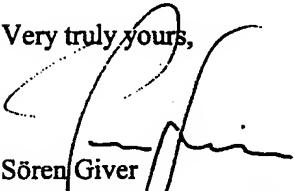
20.03.99

**AWAPATENT**Handled by  
Sören Giver/MPHelsingborg  
14 December 1998Our ref.  
2980609Attention  
Receiving SectionEuropean Patent Office  
P.B. 5818 - Patentlaan 2  
NL-2280 H.V. Rijswijk**SENT BY FAX (070) 3 40 30 16****VÄLINGE ALUMINIUM AB**  
**European Patent Application No. 98106535.2-2303**

Dear Sirs,

In response to your Communication pursuant to Article 96(1) and Rule 51(1) EPC, dated 9 December 1998, you are hereby informed that the Applicant desires to proceed further with the above-identified application. Please note that a request for accelerated examination under the PACE program was made with a letter dated 7 October 1998.

Very truly yours,

  
Sören Giver  
Authorised Representative  
AWAPATENT AB

HELSINGBORG

VAT No. SE556082702301

Other AWAPATENT offices:

STREET ADDRESS:  
Berga allé 1  
HELSINGBORG  
SWEDENPOSTAL ADDRESS:  
Berga allé 1  
S-254 52 HELSINGBORG  
SWEDENTelephone +46 42 16 30 45  
Fax +46 42 16 09 42  
Telex 32407  
Email mail@awapatent.comMALMÖ (Head office and registered office)  
STOCKHOLM GÖTEBORG  
SÖDERHAMN VÄXJÖ  
LIDKÖPING VARBERG  
ÖSTERSUND LUND



P.B.5818 - Patentlaan 2  
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FAX (070) 3 40 30 16

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Giver, Sören Bo

Awapatent AB,

P.O. Box 5117

200 21 Malmö

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1998 -12- 11

AWAPATENT, Malmö

1998 -12- 14

AWAPATENT, Helsingborg



Datum/Date

09/12/98

1991/Ref./Réf.	Anmeldung Nr./Application No./Demande n°/Patent Nr./Brevet n°.
2980609	98106535.2-2303 / 0855482
Anmelder/Applicant/Demandeur/Patentinhaber/Propriétaire/Titulaire Välinge Aluminium AB	

**COMMUNICATION PURSUANT TO ARTICLE 96(1), RULE 51(1) EPC AND  
REFERENCE TO ARTICLE 79(2) EPC**

The date on which the European Patent Bulletin mentions the  
publication of the European search report for the above-identified  
European patent application (publication number: 0855482) is  
18.11.98.

Since the request for examination of the above-identified European  
patent application was filed prior to the transmission of the European  
search report, you are hereby invited to indicate whether you desire  
to proceed further with the application.

If you do not reply to this invitation before the end of SIX MONTHS  
after the above-mentioned publication date, the application will  
be deemed to be withdrawn (Art. 96(3) EPC).

You are invited, if you wish, to comment on the European  
search report and to amend, where appropriate, the description,  
claims and drawings (Rule 51(1) EPC).

**NOTE:**

Any designation fees are also payable within SIX MONTHS of the above-  
mentioned publication date (Art. 79(2) EPC). This period for payment is  
applicable to extension fees as well.

RECEIVING SECTION



REGISTERED LETTER

EPO FORM 1082 (08.98)

SE\* 7001004 06/12/98  
011



P.B. 5818 - Patentaan 2  
2280 HV Rijswijk (ZH)  
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Giver, Sören Bo  
Awapatent AB,  
P.O. Box 5117  
200 71 Malmö  
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1814-1815

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1814-1815



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1998 -11- 2 6  
AWAPATENT, Malmö

Date/Date  
24/11/98

Inventor/Erfinder	Anmeldung Nr./Application No./Demande n°/Patent Nr./Patent No./Brevet n°
2980609	98106535.2-2303 / 0855482
Applicant/Anmelder/Demandeur/Proprietor/Propriétaire Välinge Aluminium AB	

COMMUNICATION PURSUANT TO RULE 50 EPC  
REMINDER OF PAYMENT OF THE DESIGNATION FEES (ART. 79(2) EPC)  
AND OF THE EXAMINATION FEE (ART. 94(2) EPC)

The date on which the European Patent Bulletin mentions the publication of the European search report for the above-mentioned European patent application is: 18.11.98.

Your attention is drawn to Article 79(2) and (3) EPC as well as Article 94(2) and (3) EPC according to which within SIX MONTHS after the above-mentioned publication date of the search report

- the designation fee(s) must be paid
- a written request for examination must be filed as well as the examination fee must be paid (A written request for examination has been filed already).

The current rate of the designation fee for each contracting state designated is:

DEM	GBP	FRF	CHF	NLG	SEK	BEF/LUF	ITL	ATS	ESP	GRD	DKK
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PTE	IEP	FIM	CYP								
15500	58	460	46								

The current rate of the examination fee is:

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PTE	IEP	FIM	CYP								
289900	1077	8620	854								

--/2

REGISTERED LETTER

EPO Form 1081 (06.98)  
011

SE\* 7011006 19/11/98

Mä. Brissom  
3070



If at least one designation fee and the examination fee are not paid within the period laid down in Article 79(2) or 94(2) EPC, the application shall be deemed to be withdrawn (Arts. 79(3), 94(3) EPC).

Any extension fees are also payable within the above-mentioned period.

**NOTE TO USERS OF THE AUTOMATIC DEBITING PROCEDURE:**

**1) Designation fees**

Unless the EPO receives prior instructions to the contrary, the designation fees for the contracting states marked with a cross under No. 2 of Section 32 of the Request for Grant (EPO Form 1001, 07.97) will be debited on the last day of the period pursuant to Article 79(2) EPC. If no contracting states have been marked with a cross, ALL CONTRACTING STATES have been RECORDED by the EPO in order to avoid any resulting prejudice to the rights of the applicant. In this exceptional case, the DESIGNATION FEES FOR ALL CONTRACTING STATES will be DEBITED unless instructions to the contrary have reached the EPO within the basic period for paying the designation fees.

**2) Examination fee**

Unless the EPO receives prior instructions to the contrary, the examination fee will be debited on the last day of the period for payment.

For further details see the Arrangements for the automatic debiting procedure, Supplement to OJ EPO 06/1994.

**RECEIVING SECTION**



Anmeldung Nr./Application No./Demande n°/Patent Nr./Patent No./Brevet n°	Blatt/Page/Feuille
98106535.2	2



# AWAPATENT

Handläggs av  
Sören Giver/MP

Helsingborg  
1998-10-07

Vår referens  
2980609

Attention  
DG 2

European Patent Office

D-80298 MÜNCHEN

SENT BY FAX (089) 23 99 4465

VÄLINGE ALUMINIUM AB  
European Patent Application No. 98106535.2-2303  
Publication No. 855 482

Dear Sirs,

An accelerated examination under the PACE program is hereby respectfully requested in the above-identified case.

Very truly yours,

  
Sören Giver  
Authorised Representative  
AWAPATENT AB

HELSINGBORG

Org. nr. 556082-7023

GATUADDRESS:  
Berga allé 1  
HELSINGBORG

POSTADDRESS:  
Berga allé 1  
254 52 HELSINGBORG

Telefon  
Fax  
Epost

042-16 30 45  
042-16 09 42  
mail@awapatent.com

Övriga AWAPATENT-kontor:

MALMÖ (Huvudkontor och styrelsens säte)  
STOCKHOLM GÖTEBORG  
SÖDERHAMN VÄXJÖ  
LIDKÖPING VARBERG  
ÖSTERSUND LUND

P.B. 5818 - Patentlaan 2  
2280 HV Rijswijk (ZH)  
☎ (070) 340 2040  
Tx 31651 epo nl  
FAX (070) 340 3016

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Awapatent AB,  
P.O. Box 5117  
200 71 Malmö  
SUEDE

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1998 -10- 0 8

**AWAPATENT, Helsingborg**

**Datum/Date**

**30.09.98**

Zelchen/Ref/Réf

Anmeldung Nr./Application No./Demande n°/Patent Nr./Patent No./Brevet n°

Anmelder/Applicant/Demandeur/Patentinhaber/Proprietor/Titulaire

~~98106535-2~~

~~Valinge Aluminium AB~~

## COMMUNICATION

The European Patent Office herewith transmits

- ☐ the European search report
- ☐ the declaration under Rule 45 EPC
- ☐ the partial European search report under Rule 45 EPC
- ☐ the supplementary European search report concerning the international application under Article 157 (2) EPC relating to the above-mentioned European patent application. Copies of the documents cited in the search report are enclosed.

The following ~~specification~~ given by the applicant ~~have~~ been approved by the Search Division:

- ☒ Abstract                      ☒ Title                      ☒ Figure
- ☐ The abstract was modified by the Search Division and the definitive text is attached to this communication
- ☐ The following figure will be published with the abstract, since the Search Division considers that it better characterises the invention than the one indicated by the applicant.

**Figure:**

- ☒ Additional copy (copies) of the documents cited in the European search report.

## REFUND OF THE SEARCH FEE

If applicable under Article 10 Rules relating to fees, a separate communication from the Receiving Section on the refund of the search fee will be sent later.



EPO Form 1507.1 02.93

[illegible]





European Patent  
Office

## EUROPEAN SEARCH REPORT

Application Number  
EP 98 10 6535

### DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.8)
A,P	WO 93 13280 A (JUNCKERS INDUSTRIER A/S) 8 July 1993 * abstract, details 1,2,3,14 *	1-15	E04F15/14 E04F15/02 E04F13/08
A	US 3 538 665 A (P. GOHNER) 10 November 1970 * details 7,9 *	1-15	
A	DE 26 16 077 A (HEWENER, H.J.) 27 October 1977 * figure 1 *	1-15	
A	FR 1 293 043 A (ETABLISSEMENTS PIRAUD PLASTIQUES) 5 October 1962 * figure 2, details 8,9,10,11 *	1-15	
			TECHNICAL FIELDS SEARCHED (Int.Cl.8)
			E04F A47G
The present search report has been drawn up for all claims			
Place of search STOCKHOLM		Date of completion of the search 24 August 1998	Examiner NYLUND ÖRJAN
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document			
T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

**ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.**

EP 98 10 6535

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.  
The members are as contained in the European Patent Office EDP file on  
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

24-08-1998

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9313280 A	08-07-1993	CA 2125876 A EP 0624221 A JP 7502580 T	08-07-1993 17-11-1994 16-03-1995
US 3538665 A	10-11-1970	NONE	
DE 2616077 A	27-10-1977	NONE	
FR 1293043 A	05-10-1962	NONE	



# AWAPATENT

Handled by  
Sören Giver/MP

Helsingborg  
10 September 1998

Our ref.  
2980609

Attention  
Receiving Section

European Patent Office  
P.B. 5818 - Patentlaan 2  
NL-2280 HV Rijswijk

**SENT BY FAX (070) 3 40 30 16**

VÄLINGE ALUMINIUM AB  
European Patent Application No. 98106535.2-2303  
Publication No. 855 482

Dear Sirs,

With reference to your Notification of 29 June 1998, we hereby can inform you of the correct address of the inventor as below.

Tony Pervan  
Skeppargatan 41  
S-114 52 STOCKHOLM

Very truly yours,

  
Sören Giver  
Authorised Representative  
AWAPATENT AB

HELSINGBORG VAT No. SE556082702301

STREET ADDRESS:  
Berga allé 1  
HELSINGBORG  
SWEDEN

POSTAL ADDRESS:  
Berga allé 1  
S-254 52 HELSINGBORG  
SWEDEN

Telephone +46 42 16 30 45  
Fax +46 42 16 09 42  
Telex 32407  
Email mail@awapatent.com

Other AWAPATENT offices:

MALMÖ (Head office and registered office)  
STOCKHOLM GÖTEBORG  
SÖDERHAMN VÄXJÖ  
LIDKÖPING VARBERG  
ÖSTERSUND LUND



P.B.5818 - Patentlaan 2  
2280 HV Rijswijk (ZH)  
☎ (070) 3 40 20 40  
TX 31651 epo nl  
FAX (070) 3 40 30 16

Europäisches  
Patentamt  
Eingangs-  
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European  
Patent Office  
Receiving  
Section

Office européen  
des brevets  
Section de  
Dépôt

Giver, Sören Bo  
Awapatent AB,  
P.O. Box 5117  
200 71 Malmö  
SUEDE



Datum/Date  
29.06.98

2. en/Ref./Réf. 2980609	Anmeldung Nr./Application No./Demande n°/Patent Nr./Patent No./Brevet n°. 98106535.2-2303/0855482
Anmelder/Applicant/Demandeur/Patentinhaber/Proprietor/Titulaire Välinge Aluminium AB	

**MITTEILUNG GEMÄSS TEIL A-III, 5.3 DER RICHTLINIEN FÜR DIE PRÜFUNG IM EPA**

Die dem nachstehend angegebenen Erfinder gemäss Regel 17(3) EPÜ übersandte Mitteilung kam unzustellbar zurück. Bitte teilen Sie uns die richtige Adresse des Erfinders mit (Regel 17(1) EPÜ).

\*\*\*

**NOTIFICATION PURSUANT TO PART A-III, 5.3 OF THE GUIDELINES FOR EXAMINATION IN THE EPO**

The communication issued pursuant to Rule 17(3) EPC, sent to the inventor designated below, has been returned by the postal services. You are requested to indicate the correct address of the inventor (Rule 17(1)).

\*\*\*

**NOTIFICATION FAITE EN APPLICATION DE LA PARTIE A-III, 5.3 DES DIRECTIVES RELATIVES A L'EXAMEN PRATIQUE A L'OEB**

La communication selon la règle 17(3) CBE, transmise à l'inventeur désigné ci-après, a été retournée par les services postaux. Vous êtes prié d'indiquer l'adresse exacte de l'inventeur (règle 17(1) CBE).

ERFINDER : Pervan, Tony  
INVENTOR : Radjursstigen 32  
INVENTEUR : SE / 17072 Solna

EINGANGSSTELLE  
RECEIVING SECTION  
SECTION DE DEPOT

ANDRE PERSSON



P.B.5818 - Patentlaan 2  
2280 HV Rijswijk (ZH)  
☎ (070) 3 40 20 40  
TX 31651 epo nl  
FAX (070) 3 40 30 16

Europäisches  
Patentamt

Eingangs-  
stelle

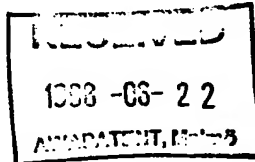
European  
Patent Office

Receiving  
Section

Office européen  
des brevets

Section de  
Dépôt

Giver, Sören Bo  
Awapatent AB,  
P.O. Box 5117  
200 71 Malmö  
SUEDE



Datum/Date  
17/06/98

Anm./Ref./Réf. 2980609	Anmeldung Nr./Application No./Demande n°/Patent Nr./Patent No./Brevet n°. 98106535.2-2303 / 0855482
Anmelder/Applicant/Demandeur/Patentinhaber/Proprietor/Titulaire Välinge Aluminium AB	

**NOTIFICATION OF EUROPEAN PUBLICATION NUMBER AND INFORMATION ON THE APPLICATION OF ARTICLE 67(3) EPC**

The Receiving Section hereby informs you that the technical preparations for publication of the above-mentioned European patent application have been completed.

The provisional protection under Art. 67(1) and (2) EPC in the individual Contracting States becomes effective only when the conditions referred to in Art. 67(3) EPC have been fulfilled (for further information, see EPO brochure "National Law relating to the EPC").

This application will be published on 29.07.98 without the European search report. The publication will be mentioned in European Patent Bulletin number 1998/31

The publication number is: 0855482

The title of the invention in the three official languages of the European Patent Office is worded as follows:

Verfahren zum Verlegen und zur mechanischer Verbindung von  
Bauplatten und Verfahren zur Herstellung eines Fussbodens

A method for laying and mechanically joining building panels and a  
method for producing a floor

Procédé de pose et de liaison mécanique des panneaux de  
construction et procédé de fabrication d'un plancher

In all future communications to the EPO, please quote the application number as indicated above, i.e. including the final four figures (which identify the Directorate responsible for the subsequent procedure).

Amendments to a European patent application or European patent must be filed in the language of the proceedings.

REMARK: An issue of the published European patent application will be forwarded to you directly from our printer.

RECEIVING SECTION



# Empfangsbescheinigung / Receipt for documents / Récépissé de documents 6

(Liste der diesem Antrag beigelegten Unterlagen)

(Checklist of enclosed documents)

(Liste des documents annexés à la présente requête)

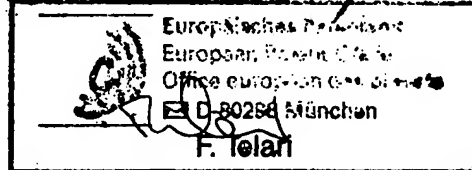
Es wird hiermit der Empfang der unten bezeichneten Dokumente bescheinigt / Receipt of the documents indicated below is hereby acknowledged / Nous attestons le dépôt des documents désignés ci-dessous

Wird im Falle der Einreichung der europäischen Patentanmeldung bei einer nationalen Behörde diese Empfangsbescheinigung vom Europäischen Patentamt übersandt, so ist sie als Mitteilung gemäß Regel 24(4) anzusehen (siehe Folie RENA). Nach Erhalt der Mitteilung nach Regel 24(4) sind alle weiteren Unterlagen, die die Anmeldung betreffen, nur noch unmittelbar beim EPA einzureichen. / If this receipt is issued by the European Patent Office and the European patent application was filed with a national authority it serves as a communication under Rule 24(4) (see Section RENA). Once the communication under Rule 24(4) has been received, all further documents relating to the application must be sent directly to the European Patent Office. / Si, en cas de dépôt de la demande de brevet européen auprès d'un service national, l'Office européen des brevets délivre le présent récépissé de documents, ce récépissé est réputé être la notification visée à la règle 24(4). Dès que la notification visée à la règle 24(4) a été reçue, tous les autres documents relatifs à la demande doivent être adressés directement à l'OEB.

AWAPATENT AB  
Box 5117  
S-200 71 MALMÖ  
Sweden

Nur für amtlichen Gebrauch / For official use only / Cadre réservé à l'administration

Datum / Date



Unterschrift / Signature / (Official stamp / Cachet / Cachet officiel)

Anmeldenummer / Application No. / N° de la demande	98106535.2		
Tag des Eingangs (Regel 24(2)) / Date of receipt (Rule 24(2)) / Date de réception (règle 24(2))	DREC	09.04.98	
Zeichen des Anmelders/Vertreters / Applicant's/ Representative's ref. / Référence du demandeur ou du mandataire	AREF		
Nur nach Einreichung der Anmeldung bei einer nationalen Behörde: / Only after filing of the application with a national authority: / Seulement après le dépôt de la demande auprès d'un service national:			
Tag des Eingangs beim EPA (Regel 24(4)) / Date of receipt at EPO (Rule 24(4)) / Date de réception à l'OEB (règle 24(4))	RENA		

A. Anmeldeunterlagen und Prioritätsbeleg(e) / Application documents and priority document(s) / Pièces de la demande et document(s) de priorité	47	Stückzahl / Number of copies / Nombre d'exemplaire	Blattzahl* eines Stücks / Number of sheets* in each copy / Nombre de feuilles* par exemplaire	Gesamtzahl der Abbildungen* / Total number of figures* / Nombre total de figures*
1. Beschreibung / Description		3	19	
2. Patentansprüche / Claim(s) / Revendication(s)		3	9	
3. Zeichnungen / Drawing(s) / Dessin(s)	<b>DRAW 1 #</b>	3	6	13
4. Zusammenfassung / Abstract / Résumé		3	1	
5. Übersetzung der Anmeldeunterlagen / Translation of the application documents / Traduction des pièces de la demande				
6. Prioritätsbeleg(e) / Priority document(s) / Document(s) de priorité				
7. Übersetzung des (der) Prioritätsbeleg(s) / Translation of priority document(s) / Traduction du (des) document(s) de priorité				
B. Der Anmeldung in der eingereichten Fassung liegen folgende Unterlagen bei / This application is filed in accompanied by the items below: / A la présente demande sont annexés les pièces suivantes:				
1. Einzelvollmacht / Special authorization / Pouvoir spécial		<input checked="" type="checkbox"/> Copy of authorisation filed in the parent application.		
2. Allgemein Vollmacht / General authorization / Pouvoir général				
3. Erfindernennung / Designation of inventor / Désignation de l'inventeur		<input checked="" type="checkbox"/>		
4. Früherer Recherchenbericht / Earlier search report / Rapport de recherche antérieur				
5. Gebührenzahlungsvordruck (EPA Form 1010) / Voucher for the settlement of fees (EPO Form 1010) / Bordereau de règlement de taxes (OEB Form 1010)				
6. Scheck (ausgeschlossen bei Einreichung bei den nationalen Behörden) / Cheque (not when filing with national authorities) / Chèque (pas de chèque en cas de dépôt auprès des services nationaux)				
7. Datenblätter für Sequenzprotokoll / Data carrier for sequence listing / Support de données pour liste de séquences	<b>SEQ 14)</b>			
8. Zusatzblatt / Additional sheet / Feuille supplémentaire				
9. Sonstige Unterlagen (bitte hier spezifizieren) / Other (please specify here) / Autres documents (veuillez préciser ici)				
C. Kopien dieser Empfangsbescheinigung / Copies of this receipt for documents / Copies de présent récépissé de documents				
	49	2	Anzahl der Kopien / Number of copies / Nombre de copies	

\* Die Richtigkeit der Angabe der Blattzahl und der Gesamtzahl der Abbildungen wurde bei Eingang nicht geprüft / No check was made on receipt that the number of sheets and the total number of figures indicated were correct / L'exactitude du nombre de feuilles et du nombre total de figures n'a pas été contrôlée lors du dépôt

EPA/EPO/OEB Form 1001.6 C7.97

2980609

Nach der Zeichnung des Anmelders / Specimen for applicant's reference / Après l'envoi à la référence du demandeur

6



## Hinweis

## Note

## Avis

1. Sie haben eine **europäische oder internationale** Patentanmeldung per **Telekopie (Telefax)** eingereicht.

Falls die einzureichenden formgerechten schriftlichen Unterlagen der betreffenden Anmeldung nicht entsprechend gekennzeichnet waren, besteht die Gefahr der Doppelanlage von Anmeldeakten. Dies trifft besonders in den Fällen zu, in denen die Telekopie (Telefax) bei einer anderen Behörde eingereicht worden ist als die formgerechten schriftlichen Unterlagen.

Um unnötigen Verwaltungsaufwand zu vermeiden, wird gebeten, die formgerechten schriftlichen Unterlagen der Anmeldung mit einem **Hinweis\***

- auf die Anmeldenummer oder das Datum der Übermittlung der Telekopie (Telefax) und den Namen der Einreichungsbehörde der Telekopie (Telefax),
- und auf die Tatsache, daß diese Unterlagen eine "Bestätigung einer durch Telekopie (Telefax) eingereichten Anmeldung" darstellen, zu versehen.

Bitte verwenden Sie hierfür künftig die beigelegten Aufkleber.

2. In den Fällen der gleichzeitigen Absendung der Telekopie (Telefax) und der formgerechten schriftlichen Unterlagen einer **europäischen** Patentanmeldung sollen diese Angaben im Formblatt für den Antrag auf Erteilung eines europäischen Patents (EPA Form 1001)\*\* in der eigens hierfür vorgesehenen Rubrik im Kopfteil dieses Vordrucks gemacht werden.

\* Siehe Ziffer 4.1 der Mitteilung des EPA vom 2. Juni 1992, ABl. EPA 1992, 306.

\*\* Siehe Ziffer 3a) der Mitteilung des EPA über die Neufassung des Formblatts für den Erteilungsantrag sowie Abschnitt I des Merkblatts zu diesem Formblatt, ABl. EPA 1989, 503.

1. You have filed a **European or international** patent application by **facsimile**.

If this has not been indicated on the hard-copy application documents complying with the rules there is a risk that the application file may be duplicated, particularly where the facsimile and the hard-copy documents have been filed with different authorities.

To avoid unnecessary administrative work, applicants are requested to **indicate** the following on the hard-copy documents\*:

- the application number or the date of the facsimile and the name of the authority with which it was filed,
- the fact that these documents represent "confirmation of an application filed by facsimile".

Please use the enclosed labels for this purpose in future.

2. In cases where the facsimile and the regulation hard-copy documents relating to a **European** patent application are filed **at the same time**, this should be indicated in the Request for Grant form for a European patent (EPO Form 1001)\*\* in the section provided for the purpose at the top of the first page of the form.

\* See Point 4.1 of the EPO notice of 2 June 1992, OJ EPO 1992, 306.

\*\* See Point 3(a) of the EPO notice concerning the revised Request for Grant form and Section I of the notes to this form, OJ EPO 1989, 503.

1. Vous avez déposé une demande de brevet **européen ou une demande internationale par télécopie (téléfax)**

Si les pièces écrites de la demande concernée présentées en bonne et due forme, qui doivent être produites, n'en font pas mention, il existe un risque de double constitution des dossiers de demandes. Cela est particulièrement vrai dans les cas où la télécopie (téléfax) a été déposée auprès d'une autre autorité que celle où sont déposées les pièces écrites présentées en bonne et due forme.

Afin d'éviter tout travail administratif inutile, il y a lieu de joindre aux pièces écrites de la demande présentée en bonne et due forme une **note\***

- indiquant le numéro de dépôt de la demande ou la date d'envoi de la télécopie (téléfax) ainsi que le nom de l'autorité auprès de laquelle la télécopie (téléfax) a été déposée, et
- mentionnant que ces pièces constituent une «confirmation d'une demande déposée par télécopie (téléfax)».

A cet effet, nous vous demandons d'utiliser désormais les autocollants ci-joints.

2. En cas d'envoi simultané de la télécopie (téléfax) et des pièces écrites d'une demande de brevet **européen** présentées en bonne et due forme, il y a lieu de porter ces indications sur le formulaire de requête en délivrance d'un brevet européen (OEB Form 1001)\*\* en remplissant la rubrique spécialement prévue au début de celui-ci.

\* Cf. point 4.1 du Communiqué de l'OEB en date du 2 juin 1992, JO OEB 1992, 306.

\*\* Cf. point 3a) du Communiqué de l'OEB concernant le nouveau formulaire de requête en délivrance ainsi que la section I de la notice relative à ce formulaire, JO OEB 1989, 503.

# AWAPATENT AB

Handled by  
Sören Giver/MP

<b>RECEIVED</b>	Malmö 1998-04-09
1998 -04- 23	Attention Cash and Accounts Dep.
AWAPATENT, Malmö	

Our ref.  
2980609

<b>RECEIVED</b>
1998 -04- 24
EUROPEAN PATENT OFFICE, Malmö

## DEBIT ORDER

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Account holder: AWAPATENT AB

**AWAPATENT AB**  
Box 5117  
S-200 71 Malmö/Sweden

## EUROPEAN PATENT OFFICE

Cash & Accounts Dep.  
DE-80298 MÜNCHEN

SENT BY REGISTERED MAIL

New Divisional Application based on  
European Patent Application No. 94915725.9  
Applicant(s): VÄLINGE ALUMINIUM AB

Please debit our deposit account with the items indicated below

<b>EPC - New application</b>		
Filing fee	<input checked="" type="checkbox"/> 100%	250
Search Fee	<input type="checkbox"/> 80%	1700
Fee for add. claims (> 10)	<input checked="" type="checkbox"/> 80	400
Fee for add. copy of ref.		40
<b>Euro-PCT; Regional phase</b>		
National fee	<input type="checkbox"/> 80%	
Search fee	<input type="checkbox"/> 0%	
Fee for add. claims	<input checked="" type="checkbox"/>	
Fee for add. copy of ref.	<input checked="" type="checkbox"/>	
Designation fee	16 <input checked="" type="checkbox"/> 150	2400
Extension fee	<input checked="" type="checkbox"/>	
Examination fee	<input type="checkbox"/> 100% <input checked="" type="checkbox"/> 80%	2240
	<input type="checkbox"/> 50% <input type="checkbox"/> 40%	
Grant fee		
Printing fee		
Others: Annuity fees year 3-5 (Year 3=750 DM, 4=800 DM, 5=850 DM)		2400
<b>Total (DEM)</b>		<b>9430</b>

AWAPATENT AB

*Sören Giver*  
Sören Giver

Please return the enclosed  
acknowledgement copy

MALMÖ (Head Office and registered office)

Senast uppdaterad: 1998-04-09

<b>STREET ADDRESS:</b>	<b>POSTAL ADDRESS:</b>	<b>Telephone</b>	+46 40 98 51 00	<b>LUND</b>	<b>VÄXJÖ</b>	<b>SÖDERHAMN</b>
Bellevuevägen 46	Box 5117	<b>Fax</b>	+46 40 26 05 16	<b>HELSINGBORG</b>	<b>GÖTEBORG</b>	
Malmö	S-200 71 MALMÖ	<b>Telex</b>	32407	<b>VARBERG</b>	<b>STOCKHOLM</b>	
SWEDEN	SWEDEN	<b>VAT No.</b>	SE556082702301			





# Antrag auf Erteilung eines europäischen Patents / Request for grant of a European patent / Requête en délivrance d'un brevet européen

Bestätigung einer bereits durch Telekopie (Telefax) eingereichten Anmeldung / Confirmation of an application already filed by facsimile / Confirmation d'une demande déjà déposée par télécopie  
Wenn ja, Datum der Übermittlung der Telekopie und Name der Einreichungsbehörde / If yes, facsimile date and name of the authority with which the documents were filed / Si oui, date d'envoi de la télécopie et nom de l'autorité de dépôt

☒ Ja / Yes / Oui

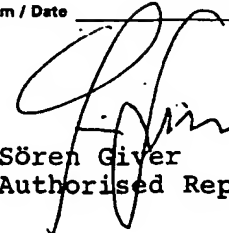
Datum / Date 980409 Behörde / Authority / Autorité EPO

Nur für amtlichen Gebrauch / For official use only / Cadre réservé à l'administration			
Anmeldenummer / Application No. / N° de la demande	MKEY	1	
Tag des Eingangs (Regel 24(2)) / Date of receipt (Rule 24(2)) / Date de réception (règle 24(2))	DREC	2	
Tag des Eingangs beim EPA (Regel 24(4)) / Date of receipt at EPO (Rule 24(4)) / Date de réception à l'OEB (règle 24(4))	RENA	3	
Anmeldetag / Date of filing / Date de dépôt		4	
Tabulatoren-Positionen / Tabulation marks / Arrêts de tabulation			
Es wird die Erteilung eines europäischen Patents und gemäß Artikel 94 die Prüfung der Anmeldung beantragt / Grant of a European patent, and examination of the application under Article 94, are hereby requested / Il est demandé la délivrance d'un brevet européen et, conformément à l'article 94, l'examen de la demande	EXAM 4	5	<input checked="" type="checkbox"/> Prüfungsantrag in einer zugelassenen Nichtamtssprache (siehe Merkblatt II, 5): / Request for examination in an admissible non-EPO language (see Notes II, 5): / Requête en examen dans une langue non officielle autorisée (voir notice II, 5): Härmed begärs patenterbarhetsprövning.
Zeichen des Anmelders oder Vertreters (max. 15 Positionen) / Applicant's or representative's reference (maximum 15 spaces) / Référence du demandeur ou du mandataire (max. 15 caractères ou espaces)	AREF	6	2980609
ANMELDER / APPLICANT / DEMANDEUR Name / Nom		7	VÄLINGE ALUMINIUM AB
Anschrift / Address / Adresse		8	Kyrkogränd 1 S-260 40 VIKEN Sweden
APPR 01 #			
# DEST #			
Zustellschrift / Address for correspondence / Adresse pour la correspondance		9	
PADR			
Staat des Wohnsitzes oder Sitzes / State of residence or of principal place of business / Etat du domicile ou du siège		10	Sweden
Staatsangehörigkeit / Nationality / Nationalité		11	Sweden
Telefon / Telephone / Téléphone		12	
Telex / Téllex		13	
Telefax / Fax / Téléfax		14	
Weitere(r) Anmelder auf Zusatzblatt / Additional applicant(s) on additional sheet / Autre(s) demandeur(s) sur feuille additionnelle		15	GIVER, Sören
VERTRETER / REPRESENTATIVE / MANDATAIRE: Name / Nom			
(Nur einen Vertreter angeben, der in das europäische Patentregister eingetragen und an den zugestellt wird / Name only one representative, who is to be listed in the Register of European Patents and to whom notification is to be made / N'indiquer qu'un seul mandataire, qui sera inscrit au Registre européen des brevets et auquel signification sera faite)			
FREP 01			
Geschäftsanschrift / Address of place of business / Adresse professionnelle		16	AWAPATENT AB Box 5117 S-200 71 MALMÖ Sweden
Telefon / Telephone / Téléphone		17	+46 40 98 51 00
Telex / Téllex		18	32407
Telefax / Fax / Téléfax			+46 40 26 05 16
Weitere(r) Vertreter auf Zusatzblatt / Additional representative(s) on additional sheet / Autre(s) mandataires(s) sur feuille additionnelle		19	

<p><b>Vollmacht / Authorisation / Pouvoir:</b> Ist beigelegt / Is enclosed / ci-joint</p> <p>Ist registriert unter Nummer / has been registered under No. / a été enregistré sous le n°</p> <p style="text-align: right;"><b>GENA</b></p> <p><b>ERFINDER / INVENTOR / INVENTEUR:</b></p> <p>Anmelder ist (sind) alleinige(r) Erfinder / The applicant(s) is (are) the sole inventor(s) / Le(s) demandeur(s) est (sont) le (les) seul(s) inventeur(s)</p> <p>Erfindernennung auf gesondertem Schriftstück / Designation of inventor attached / Voir la désignation de l'inventeur ci-jointe</p> <p><b>BEZEICHNUNG DER ERFINDUNG / TITLE OF INVENTION / TITRE DE L'INVENTION:</b></p> <div style="border: 1px solid black; padding: 5px; text-align: center;"> TIDE      TIEN      TIFR </div> <p><b>PRIORITÄTSEKLÄRUNG / DECLARATION OF PRIORITY / DECLARATION DE PRIORITE</b></p> <p>01 # . . . # . . . . . # . . . . .</p> <p>02 # . . . # . . . . . # . . . . .</p> <p>03 # . . . # . . . . . # . . . . .</p> <p>04 # . . . # . . . . . # . . . . .</p> <p>Weitere Prioritätserklärungen auf Zusatzblatt / Additional declaration(s) of priority on additional sheet / Autre(s) déclaration(s) de priorité sur feuille additionnelle</p> <p><b>BIOLOGISCHES MATERIAL      BIOLOGICAL MATERIAL</b></p> <p>Die Erfindung betrifft biologisches Material oder seine Verwendung, das nach Regel 28 hinterlegt worden ist.      The invention relates to and/or uses biological material deposited under Rule 28.</p> <div style="border: 1px solid black; padding: 5px; text-align: center;"> BIOM 1 #      # </div> <p>Die Angaben nach Regel 28(1) c) sind in den technischen Anmeldeunterlagen enthalten auf / The particulars referred to in Rule 28(1) (c) are given in the technical documents in the application on / Les indications visées à la règle 28(1) c) figurent dans les pièces techniques de la demande à la /aux</p> <p>werden später mitgeteilt / will be submitted later / seront communiquées ultérieurement</p> <p>Die Empfangsbescheinigung(en) der Hinterlegungsstelle ist (sind) beigelegt / The receipt(s) of deposit issued by the depositary institution is (are) enclosed / Le(s) récépissé(s) de dépôt délivré(s) par l'autorité de dépôt est (sont) ci-joint(s)</p> <p>wird (werden) nachgereicht / will be filed later / sera (seront) produit(s) ultérieurement</p> <p>Verzicht auf die Verpflichtung des Antragstellers nach Regel 28(3) auf gesondertem Schriftstück / Waiver of the right to an undertaking from the requester pursuant to Rule 28(3) attached / Renonciation, sur document distinct, à l'engagement du requérant au titre de la règle 28(3)</p>	<div style="border: 1px solid black; padding: 5px;"> 20 <input type="checkbox"/> </div> <div style="border: 1px solid black; padding: 5px;"> 21 <input type="checkbox"/> Nummer Number Numéro </div> <div style="border: 1px solid black; padding: 5px;"> 22 <input type="checkbox"/> </div> <div style="border: 1px solid black; padding: 5px;"> 23 <input checked="" type="checkbox"/> </div> <div style="border: 1px solid black; padding: 5px;"> 24 <b>A METHOD FOR LAYING AND MECHANICALLY JOINING BUILDING PANELS AND A METHOD FOR PRODUCING A FLOOR</b> </div> <div style="border: 1px solid black; padding: 5px;"> 25 <table style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 33%;">Staat / State / Etat</th> <th style="width: 33%;">Anmeldetag / Filing date / Date de dépôt</th> <th style="width: 33%;">AktENZEICHEN / Application No. / N° de la demande</th> </tr> <tr> <td>1 Sweden</td> <td>93-05-10</td> <td>9301595-6</td> </tr> <tr> <td>2</td> <td></td> <td></td> </tr> <tr> <td>3</td> <td></td> <td></td> </tr> <tr> <td>4</td> <td></td> <td></td> </tr> </table> </div> <div style="border: 1px solid black; padding: 5px;"> 26 <b>MATIERE BIOLOGIQUE</b> L'invention concerne et/ou utilise la matière biologique, déposée conformément à la règle 28. </div> <div style="border: 1px solid black; padding: 5px;"> 27 <table style="width: 100%; border-collapse: collapse;"> <tr> <th style="width: 50%;">Seite(n) / page(s)</th> <th style="width: 50%;">Zeile(n) / line(s) / ligne(s)</th> </tr> </table> </div> <div style="border: 1px solid black; padding: 5px;"> 27a <input type="checkbox"/> </div> <div style="border: 1px solid black; padding: 5px;"> 28 <input type="checkbox"/> </div> <div style="border: 1px solid black; padding: 5px;"> 28a <input type="checkbox"/> </div> <div style="border: 1px solid black; padding: 5px;"> 29 <input type="checkbox"/> </div>	Staat / State / Etat	Anmeldetag / Filing date / Date de dépôt	AktENZEICHEN / Application No. / N° de la demande	1 Sweden	93-05-10	9301595-6	2			3			4			Seite(n) / page(s)	Zeile(n) / line(s) / ligne(s)
Staat / State / Etat	Anmeldetag / Filing date / Date de dépôt	AktENZEICHEN / Application No. / N° de la demande																
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2																		
3																		
4																		
Seite(n) / page(s)	Zeile(n) / line(s) / ligne(s)																	

<p><b>Falls das biologische Material nicht vom Anmelder, sondern von einem Dritten hinterlegt wurde: / Where the biological material has been deposited by a person other than the applicant: / Lorsque la matière biologique a été déposée par une personne autre que le demandeur:</b></p> <p><b>Ermächtigung nach Regel 28(1)d) / Authorisation under Rule 28(1)(d) / Autorisation en vertu de la règle 28(1)d)</b></p> <p><b>Ist beigelegt / Is enclosed / ci-jointe</b></p> <p><b>wird nachgereicht / will be filed later / sera produite ultérieurement</b></p>	30	<p><b>Name und Anschrift des Hinterlegers / Name and address of depositor / Nom et adresse du déposant :</b></p>
<p><b>NUCLEOTID-UND AMINOSÄURESEQUENZEN / NUCLEOTIDE AND AMINO ACID SEQUENCES / SEQUENCES DE NUCLEOTIDES ET D'ACIDES AMINES</b></p> <p><b>Die Beschreibung enthält ein Sequenzprotokoll nach Regel 27a(1) / The description contains a sequence listing in accordance with Rule 27a(1) / La description contient une liste de séquences selon la règle 27bis(1)</b></p> <p><b>Der vorgeschriebene maschinenlesbare Datenträger ist beigelegt / The prescribed machine readable data carrier is enclosed / Le support de données prescrit déchiffirable par machine est annexé</b></p> <p><b>Es wird hiermit erklärt, daß die auf dem Datenträger gespeicherte Information mit dem schriftlichen Sequenzprotokoll übereinstimmt (Regel 27a(2)) / It is hereby stated that the information recorded on the data carrier is identical to the written sequence listing (Rule 27a(2)) / Il est déclaré par la présente que l'information figurant sur le support de données est identique à celle que contient la liste de séquences écrite (règle 27bis (2))</b></p>	30a 30b  31	<p><b>SEQL (1)</b></p>
<p><b>BENENNUNG DER VERTRAGSSTAATEN UND ERKLÄRUNGEN HIERZU</b></p> <p>1. Hiermit werden sämtliche Vertragsstaaten des EPU benannt, die bei Einreichung dieser Anmeldung dem EPU angehören.</p> <p>2. Der Anmelder beabsichtigt derzeit, Benennungsgebühren für die nachfolgend angekreuzten Vertragsstaaten zu entrichten:</p>	32	<p><b>DESIGNATION OF THE CONTRACTING STATES AND ASSOCIATED DECLARATIONS</b></p> <p>1. All States which are Contracting States to the EPC at the filing of this application are hereby designated.</p> <p>2. The applicant currently intends to pay designation fees for the States marked below with a cross:</p>
<p><input checked="" type="checkbox"/> AT Österreich / Austria / Autriche</p> <p><input checked="" type="checkbox"/> BE Belgien / Belgium / Belgique</p> <p><input checked="" type="checkbox"/> CH/LI Schweiz und Liechtenstein / Switzerland and Liechtenstein / Suisse et Liechtenstein</p> <p><input checked="" type="checkbox"/> DE Deutschland / Germany / Allemagne</p> <p><input checked="" type="checkbox"/> DK Dänemark / Denmark / Danemark</p> <p><input checked="" type="checkbox"/> ES Spanien / Spain / Espagne</p> <p><input type="checkbox"/> FI Finnland / Finland / Finlande</p> <p><input checked="" type="checkbox"/> FR Frankreich / France / France</p> <p><input type="checkbox"/> _____</p> <p><input type="checkbox"/> _____</p>	DEST	<p><b>DESIGNATION D'ETATS CONTRACTANTS ET DECLARATIONS A CE PROPOS</b></p> <p><input checked="" type="checkbox"/> 1. Sont désignés tous les Etats qui sont des Etats contractants de la CBE à la date du dépôt de la présente demande.</p> <p>2. Le demandeur se propose actuellement de payer des taxes de désignation pour les Etats cochés ci-dessous :</p> <p><input checked="" type="checkbox"/> GB Vereinigtes Königreich / United Kingdom / Royaume-Uni</p> <p><input checked="" type="checkbox"/> GR Griechenland / Greece / Grèce</p> <p><input checked="" type="checkbox"/> IE Irland / Ireland / Irlande</p> <p><input checked="" type="checkbox"/> IT Italien / Italy / Italie</p> <p><input checked="" type="checkbox"/> LU Luxemburg / Luxembourg / Luxembourg</p> <p><input checked="" type="checkbox"/> MC Monaco / Monaco / Monaco</p> <p><input checked="" type="checkbox"/> NL Niederlande / Netherlands / Pays-Bas</p> <p><input checked="" type="checkbox"/> PT Portugal / Portugal / Portugal</p> <p><input checked="" type="checkbox"/> SE Schweden / Sweden / Suède</p> <p><input type="checkbox"/> _____</p> <p><input type="checkbox"/> _____</p>
<p><small>(Platz für Vertragsstaaten, für die das EPU nach Drucklegung dieses Formblatts in Kraft tritt / Space for Contracting States for which the EPC enters into force after this form has been printed / Prévu pour des Etats contractants à l'égard desquels la CBE entrera en vigueur après l'impression du présent formulaire)</small></p> <p>Es wird beantrag, für die unter Nr. 2 nicht angekreuzten Vertragsstaaten von der Zustellung von Mitteilungen nach Regel 85a (1) und Regel 69 (1) abzusehen.</p> <p>Ist ein <b>automatischer Abbuchungsauftrag</b> erteilt worden (Feld 43), so wird beantrag, bei Ablauf der Grundfrist nach Artikel 79 (2) Benennungsgebühren nur für die unter Nr. 2 angekreuzten Vertragsstaaten abzubuchen.</p>	<p><small>(Platz für Vertragsstaaten, für die das EPU nach Drucklegung dieses Formblatts in Kraft tritt / Space for Contracting States for which the EPC enters into force after this form has been printed / Prévu pour des Etats contractants à l'égard desquels la CBE entrera en vigueur après l'impression du présent formulaire)</small></p> <p><input checked="" type="checkbox"/> <b>Prrière de ne pas procéder à la signification des notifications prévues par les règles 85bis(1) et 69(1) pour les Etats contractants n'ayant pas été cochés au n° 2.</b></p> <p><b>Si un ordre de prélèvement automatique a été donné (rubrique 43), prière de ne prélever à l'expiration des délais de base tels que définis à l'article 79(2) que les taxes de désignation pour les Etats contractants cochés au n° 2.</b></p>	

<b>33</b> <b>Verschiedene Anmelder für verschiedene Vertragsstaaten /</b> <b>Different applicants for different Contracting States /</b> <b>Différents demandeurs pour différents Etats contractants</b>	<b>Name(n) des (der) Anmelder(s) und benannte Vertragsstaaten /</b> <b>Name(s) of applicant(s) and designated Contracting States /</b> <b>Nom(s) du (des) demandeur(s) et des Etats contractants désignés</b>																																	
<b>APPR 02 #</b> <span style="border: 1px solid black; display: inline-block; width: 100px; height: 15px;"></span>																																		
<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <b>ERSTRECKUNG DES</b>  <b>EUROPÄISCHEN PATENTS</b>           Diese Anmeldung gilt als Antrag, die europäische Patentanmeldung und das darauf erteilte europäische Patent auf alle Nicht-Vertragsstaaten des EPU zu erstrecken, mit denen am Tag ihrer Einreichung „Erstreckungsabkommen“ bestehen (Derzeit: Albanien, Litauen, Lettland, Rumänien, Slowenien). Die Erstreckung wird jedoch nur wirksam, wenn die vorgeschriebene Erstreckungsgebühr entrichtet wird.       </div> <div style="width: 45%;"> <b>EXTENSION OF THE</b>  <b>EUROPEAN PATENT</b>           This application is deemed to be a request to extend the European patent application and the European patent granted in respect of it to all non-Contracting States to the EPC with which "extension agreements" exist on the date on which the application is filed (Present situation: Albania, Lithuania, Latvia, Romania, Slovenia). However, the extension only takes effect if the prescribed extension fee is paid.       </div> </div> <div style="text-align: right; margin-top: 10px;"> <div style="border: 1px solid black; padding: 2px 5px; display: inline-block;">EXPT</div> </div> <p>Der Anmelder beabsichtigt derzeit, die Erstreckungsgebühr für die nachfolgend angekreuzten Staaten zu entrichten: / The applicant currently intends to pay the extension fee for the States marked below with a cross: / La demandeur se propose actuellement d'acquitter la taxe d'extension pour les Etats dont le nom est coché ci-après:</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 80%;">Albanien / Albania / Albanie</td> <td style="width: 20%; text-align: center;">AL</td> <td style="width: 10%; text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>Litauen / Lithuania / Lituanie</td> <td style="text-align: center;">LT</td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>Lettland / Latvia / Lettonie</td> <td style="text-align: center;">LV</td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>Rumänien / Romania / Roumanie</td> <td style="text-align: center;">RO</td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>Slowenien / Slovenia / Slovénie</td> <td style="text-align: center;">SI</td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr><td> </td><td> </td><td style="text-align: center;"><input type="checkbox"/></td></tr> <tr><td> </td><td> </td><td style="text-align: center;"><input type="checkbox"/></td></tr> <tr><td> </td><td> </td><td style="text-align: center;"><input type="checkbox"/></td></tr> <tr><td> </td><td> </td><td style="text-align: center;"><input type="checkbox"/></td></tr> <tr><td> </td><td> </td><td style="text-align: center;"><input type="checkbox"/></td></tr> <tr><td> </td><td> </td><td style="text-align: center;"><input type="checkbox"/></td></tr> </table> <p style="font-size: small; margin-top: 10px;">(Platz für Staaten, mit denen nach Drucklegung dieses Formblatts „Erstreckungsabkommen“ in Kraft treten) / (Space for States with which "extension agreements" enter into force after this form has been printed) / (Place pour des Etats à l'égard desquels des «accords d'extension» entreront en vigueur après l'impression du présent formulaire)</p>	Albanien / Albania / Albanie	AL	<input type="checkbox"/>	Litauen / Lithuania / Lituanie	LT	<input type="checkbox"/>	Lettland / Latvia / Lettonie	LV	<input type="checkbox"/>	Rumänien / Romania / Roumanie	RO	<input type="checkbox"/>	Slowenien / Slovenia / Slovénie	SI	<input type="checkbox"/>			<input type="checkbox"/>			<input type="checkbox"/>			<input type="checkbox"/>			<input type="checkbox"/>			<input type="checkbox"/>			<input type="checkbox"/>	<b>34</b> <b>EXTENSION DES EFFETS</b> <b>DU BREVET EUROPEEN</b>  La présente demande est réputée constituer une requête en extension des effets de la demande de brevet européen et du brevet européen délivré sur la base de cette demande à tous les Etats non parties à la CBE avec lesquels il existe un «accord d'extension» à la date du dépôt de la demande (Situation actuelle : Albanie, Lituanie, Lettonie, Roumanie, Slovénie). Toutefois l'extension ne produit ses effets que s'il est acquitté la taxe d'extension prescrite.
Albanien / Albania / Albanie	AL	<input type="checkbox"/>																																
Litauen / Lithuania / Lituanie	LT	<input type="checkbox"/>																																
Lettland / Latvia / Lettonie	LV	<input type="checkbox"/>																																
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<b>Die Anmeldung ist eine Teilanmeldung /</b> <b>The application is a divisional</b> <b>application /</b> <b>La présente demande</b> <b>constitue une demande</b> <b>divisionnaire</b>	<b>35</b> <input checked="" type="checkbox"/> <span style="border: 1px solid black; padding: 2px 10px;">94915725.9</span> <b>Nummer der früheren Anmeldung</b> <b>No. of earlier application</b> <b>Numéro de la demande initiale</b>																																	
<b>Es handelt sich um eine Anmeldung nach Art. 61(1)(b) /</b> <b>The application is an Art. 61(1)(b)</b> <b>application / La présente demande</b> <b>constitue une demande</b> <b>selon l'article 61(1)(b)</b>	<b>36</b> <span style="border: 1px solid black; display: inline-block; width: 100px; height: 15px;"></span> <b>Nummer der früheren Anmeldung</b> <b>No. of earlier application</b> <b>Numéro de la demande initiale</b>																																	
<b>Patentansprüche / Claims / Revendications</b>	<b>37</b> <span style="border: 1px solid black; padding: 2px 10px;">15</span> <b>Zahl der Patentansprüche</b> <b>Number of claims</b> <b>Nombre de revendications</b>																																	
<b>Zur Veröffentlichung mit der Zusammenfassung wird vorgeschlagen</b> <b>Abbildung Nr. / With the abstract it is proposed to publish</b> <b>figure No. / Il est proposé de publier avec l'abrégé</b> <b>la figure n°</b>	<b>39</b> <span style="border: 1px solid black; padding: 2px 10px;">2a-2c</span> <b>Nummer / Number / Numéro</b>																																	
<div style="text-align: right; margin-top: 10px;"> <div style="border: 1px solid black; padding: 2px 5px; display: inline-block;">DRAW (2)</div> </div>																																		

Zusätzliche Abschrift(en) der im europäischen Recherchenbericht angeführten Schriftstücke wird (werden) beantragt / Additional copy(ies) of the documents cited in the European search report is (are) requested / Prière de fournir une (des) copie(s) supplémentaire(s) des documents cités dans le rapport de recherche européenne <div style="text-align: right;">ASOC</div>	40 <div style="border: 1px solid black; padding: 2px; display: inline-block;">1</div> Anzahl der zusätzlichen Sätze von Abschriften Number of additional sets of copies Nombre de jeux supplémentaires de copies
Es wird die Rückerstattung der Recherchegebühr gemäß Art. 10 GebO beantragt / Refund of the search fee is requested pursuant to Article 10 of the Rules relating to Fees / Le remboursement de la taxe de recherche est demandé en vertu de l'article 10 du règlement relatif aux taxes  Eine Kopie des Recherchenberichts ist beigelegt / A copy of the search report is attached / Une copie du rapport de recherche est jointe	41 <div style="border: 1px solid black; padding: 2px; display: inline-block;">X</div> 42 <div style="border: 1px solid black; width: 20px; height: 15px; display: inline-block;"></div>
<b>AUTOMATISCHER ABBUCHUNGSauftrag</b> (nur möglich für Inhaber von beim EPA geführten laufenden Konten) <b>AUTOMATIC DEBIT ORDER</b> (for EPO deposit account holders only) <b>ORDRE DE PRELEVEMENT AUTOMATIQUE</b> (uniquement possible pour les titulaires de comptes courants ouverts auprès de l'OEB)  Das Europäische Patentamt wird hiermit beauftragt, fällig werdende Gebühren und Auslagen nach Maßgabe der Vorschriften über das automatische Abbuchungsverfahren vom nebenstehenden laufenden Konto abzubuchen / The European Patent Office is hereby authorised, under the Arrangements for the automatic debiting procedure, to debit from the deposit account opposite any fees and costs falling due / Par la présente, il est demandé à l'Office européen des brevets de prélever du compte courant ci-contre les taxes et frais venant à échéance, conformément à la réglementation relative au prélèvement automatique <div style="text-align: right;">DECA</div>	<b>FÜR AUTOMATISCHEN ABBUCHUNGSauftrag:</b> <b>FOR AUTOMATIC DEBIT ORDER:</b> <b>POUR L'ORDRE DE PRELEVEMENT AUTOMATIQUE:</b>  Nummer des laufenden Kontos / Name des Kontoinhabers / Deposit account number / Account holder's name / Numéro du compte courant Nom du titulaire du compte  43 <div style="border: 1px solid black; width: 100px; height: 15px; display: inline-block;"></div>
Eventuelle RÜCKZAHLUNGEN auf das nebenstehende beim EPA geführte laufende Konto / REIMBURSEMENT, if any, to EPO deposit account opposite / REMBOURSEMENTS éventuels à effectuer sur le compte courant ci-contre ouvert auprès de l'OEB <div style="text-align: right;">DEPA</div>	44 <div style="border: 1px solid black; padding: 2px; display: inline-block;">2810.0022</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">AWAPATENT AB</div>
Die vorgeschriebene Liste über die diesem Antrag beigelegten Unterlagen ergibt sich aus der vorbereiteten Empfangsbescheinigung (Seite 6 dieses Antrages) The prescribed list of documents enclosed with this request is shown on the prepared receipt (page 6 of this request)	45 La liste prescrite des documents joints à cette requête figure sur le récépissé préalable (page 6 de la présente requête)
Unterschrift(en) des (der) Anmelders(s) oder Vertreter(s) / Signature(s) of applicant(s) or representative(s) / Signature(s) du (des) demandeur(s) ou du (des) mandataire(s)  Ort / Place / Lieu <div style="border: 1px solid black; padding: 2px; display: inline-block;">MALMÖ</div>	46 Für Angestellte nach Artikel 133(3) Satz 1 mit allgemeiner Vollmacht / For employees under Article 133(3), 1st sentence, having a general authorisation / Pour les employés mentionnés à l'article 133(3), 1 <sup>re</sup> phrase, munis d'un pouvoir général Nr. / No. / n° :
Datum / Date <div style="border: 1px solid black; padding: 2px; display: inline-block;">1998-04-09</div>  <div style="text-align: center;">   <b>Sören Giver</b>  <b>Authorised Representative</b> </div>  Name des (der) Unterzeichneten bitte mit Schreibmaschine wiederholen. Bei juristischen Personen bitte die Stellung des (der) Unterzeichneten innerhalb der Gesellschaft mit Schreibmaschine angeben. / Please type name under signature. In case of legal persons, the position of the signatory within the company should also be typed. / Le ou les noms des signataires doivent être également dactylographiés. S'il s'agit d'une personne morale, la position occupée au sein de celle-ci par le ou les signataires sera indiquée à la machine à écrire.	

# Empfangsbescheinigung / Receipt for documents / Récépissé de documents 6

(Liste der diesem Antrag beigefügten Unterlagen)

(Checklist of enclosed documents)

(Liste des documents annexés à la présente requête)

Es wird hiermit der Empfang der unten bezeichneten Dokumente bescheinigt / Receipt of the documents indicated below is hereby acknowledged / Nous attestons le dépôt des documents désignés ci-dessous

Wird im Falle der Einreichung der europäischen Patentanmeldung bei einer nationalen Behörde diese Empfangsbescheinigung vom Europäischen Patentamt übersandt, so ist sie als Mitteilung gemäß Regel 24(4) anzusehen (siehe Feld RENA). Nach Erhalt der Mitteilung nach Regel 24(4) sind alle weiteren Unterlagen, die die Anmeldung betreffen, nur noch unmittelbar beim EPA einzureichen. / If this receipt is issued by the European Patent Office and the European patent application was filed with a national authority it serves as a communication under Rule 24(4) (see Section RENA). Once the communication under Rule 24(4) has been received, all further documents relating to the application must be sent directly to the European Patent Office. / Si, en cas de dépôt de la demande de brevet européen auprès d'un service national, l'Office européen des brevets délivre le présent récépissé de documents, ce récépissé est réputé être la notification visée à la règle 24(4). Dès que la notification visée à la règle 24(4) a été reçue, tous les autres documents relatifs à la demande doivent être adressés directement à l'OEB.

AWAPATENT AB  
Box 5117  
S-200 71 MALMÖ  
Sweden

Nur für amtlichen Gebrauch / For official use only / Cadre réservé à l'administration

Datum / Date

Unterschrift / Amtsstempel / Signature / Official stamp / Signature / Cachet officiel

Anmeldenummer / Application No. / N° de la demande			
Tag des Eingangs (Regel 24(2)) / Date of receipt (Rule 24(2)) / Date de réception (règle 24(2))	DREC		
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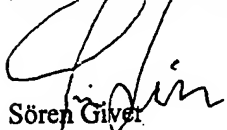
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MALMÖ (Head Office and registered office)

Senast uppdaterad: 1998-04-09

STREET ADDRESS:  
Bellevuevägen 46  
Malmö  
SWEDEN

POSTAL ADDRESS:  
Box 5117  
S-200 71 MALMÖ  
SWEDEN

Telephone +46 40 98 51 00  
Fax +46 40 26 05 16  
Telex 32407  
VAT No. SE556082702301

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A METHOD FOR LAYING AND MECHANICALLY JOINING BUILDING  
PANELS AND A METHOD FOR PRODUCING A FLOOR

Technical Field

The invention generally relates to a system for providing a joint along adjacent joint edges of two building panels, especially floor panels.

5        More specifically, the joint is of the type where the adjacent joint edges together form a first mechanical connection locking the joint edges to each other in a first direction at right angles to the principal plane of the panels, and where a locking device forms a second  
10       mechanical connection locking the panels to each other in a second direction parallel to the principal plane and at right angles to the joint edges, the locking device comprising a locking groove which extends parallel to and spaced from the joint edge of one of the panels, and said  
15       locking groove being open at the rear side of this one panel.

The invention is especially well suited for use in joining floor panels, especially thin laminated floors. Thus, the following description of the prior art and of  
20       the objects and features of the invention will be focused on this field of use. It should however be emphasised that the invention is useful also for joining ordinary wooden floors as well as other types of building panels, such as wall panels and roof slabs.

25       Background of the Invention

A joint of the aforementioned type is known e.g. from SE 450,141. The first mechanical connection is achieved by means of joint edges having tongues and grooves. The locking device for the second mechanical  
30       connection comprises two oblique locking grooves, one in the rear side of each panel, and a plurality of spaced-



apart spring clips which are distributed along the joint and the legs of which are pressed into the grooves, and which are biased so as to tightly clamp the floor panels together. Such a joining technique is especially useful  
5 for joining thick floor panels to form surfaces of a considerable expanse.

Thin floor panels of a thickness of about 7-10 mm, especially laminated floors, have in a short time taken a substantial share of the market. All thin floor panels  
10 employed are laid as "floating floors" without being attached to the supporting structure. As a rule, the dimension of the floor panels is 200 x 1200 mm, and their long and short sides are formed with tongues and grooves. Traditionally, the floor is assembled by applying glue in  
15 the groove and forcing the floor panels together. The tongue is then glued in the groove of the other panel. As a rule, a laminated floor consists of an upper decorative wear layer of laminate having a thickness of about 1 mm, an intermediate core of particle board or other board,  
20 and a base layer to balance the construction. The core has essentially poorer properties than the laminate, e.g. in respect of hardness and water resistance, but it is nonetheless needed primarily for providing a groove and tongue for assemblage. This means that the overall  
25 thickness must be at least about 7 mm. These known laminated floors using glued tongue-and-groove joints however suffer from several inconveniences.

First, the requirement of an overall thickness of at least about 7 mm entails an undesirable restraint in connection with the laying of the floor, since it is easier  
30 to cope with low thresholds when using thin floor panels, and doors must often be adjusted in height to come clear of the floor laid. Moreover, manufacturing costs are directly linked with the consumption of material.

35 Second, the core must be made of moisture-absorbent material to permit using water-based glues when laying the floor. Therefore, it is not possible to make the

floors thinner using so-called compact laminate, because of the absence of suitable gluing methods for such non-moisture-absorbent core materials.

Third, since the laminate layer of the laminated  
5 floors is highly wear-resistant, tool wear is a major problem when working the surface in connection with the formation of the tongue.

Fourth, the strength of the joint, based on a glued  
tongue-and-groove connection, is restricted by the pro-  
10 perties of the core and of the glue as well as by the depth and height of the groove. The laying quality is entirely dependent on the gluing. In the event of poor gluing, the joint will open as a result of the tensile stresses which occur e.g. in connection with a change in  
15 air humidity.

Fifth, laying a floor with glued tongue-and-groove joints is time-consuming, in that glue must be applied to every panel on both the long and short sides thereof.

Sixth, it is not possible to disassemble a glued  
20 floor once laid, without having to break up the joints. Floor panels that have been taken up cannot therefore be used again. This is a drawback particularly in rental houses where the flat concerned must be put back into the initial state of occupancy. Nor can damaged or worn-out  
25 panels be replaced without extensive efforts, which would be particularly desirable on public premises and other areas where parts of the floor are subjected to great wear.

Seventh, known laminated floors are not suited for  
30 such use as involves a considerable risk of moisture penetrating down into the moisture-sensitive core.

Eighth, present-day hard, floating floors require, prior to laying the floor panels on hard subfloors, the laying of a separate underlay of floor board, felt, foam  
35 or the like, which is to damp impact sounds and to make the floor more pleasant to walk on. The placement of the underlay is a complicated operation, since the underlay

must be placed in edge-to-edge fashion. Different underlays affect the properties of the floor.

There is thus a strongly-felt need to overcome the above-mentioned drawbacks of the prior art. It is however  
5 not possible simply to use the known joining technique with glued tongues and grooves for very thin floors, e.g. with floor thicknesses of about 3 mm, since a joint based on a tongue-and-groove connection would not be sufficiently strong and practically impossible to produce for  
10 such thin floors. Nor are any other known joining techniques usable for such thin floors. Another reason why the making of thin floors from e.g. compact laminate involves problems is the thickness tolerances of the panels, being about 0.2-0.3 mm for a panel thickness of  
15 about 3 mm. A 3-mm compact laminate panel having such a thickness tolerance would have, if ground to uniform thickness on its rear side, an unsymmetrical design, entailing the risk of bulging. Moreover, if the panels have different thicknesses, this also means that the joint  
20 will be subjected to excessive load.

Nor is it possible to overcome the above-mentioned problems by using double-adhesive tape or the like on the undersides of the panels, since such a connection catches directly and does not allow for subsequent  
25 adjustment of the panels as is the case with ordinary gluing.

Using U-shaped clips of the type disclosed in the above-mentioned SE 450,141, or similar techniques, to overcome the drawbacks discussed above is no viable alternative either. Especially, biased clips of this type  
30 cannot be used for joining panels of such a small thickness as 3 mm. Normally, it is not possible to disassemble the floor panels without having access to their undersides. This known technology relying on clips suffers  
35 from the additional drawbacks:

- Subsequent adjustment of the panels in their longitudinal direction is a complicated operation in con-

nection with laying, since the clips urge the panels tightly against each other.

- Floor laying using clips is time-consuming.
- This technique is usable only in those cases where  
5 the floor panels are resting on underlying joists with the clips placed therebetween. For thin floors to be laid on a continuous, flat supporting structure, such clips cannot be used.
- The floor panels can be joined together only at  
10 their long sides. No clip connection is provided on the short sides.

#### Technical Problems and Objects of the Invention

A main object of the invention therefore is to provide a system for joining together building panels, especially floor panels for hard, floating floors, which  
15 allows using floor panels of a smaller overall thickness than present-day floor panels.

A particular object of the invention is to provide a panel-joining system which

- 20 - makes it possible in a simple, cheap and rational way to provide a joint between floor panels without requiring the use of glue, especially a joint based primarily only on mechanical connections between the panels;
- 25 - can be used for joining floor panels which have a smaller thickness than present-day laminated floors and which have, because of the use of a different core material, superior properties than present-day floors even at a thickness of 3 mm;
- 30 - makes it possible between thin floor panels to provide a joint that eliminates any unevennesses in the joint because of thickness tolerances of the panels;
- allows joining all the edges of the panels;
- reduces tool wear when manufacturing floor panels  
35 with hard surface layers;

- allows repeated disassembly and reassembly of a floor previously laid, without causing damage to the panels, while ensuring high laying quality;
- makes it possible to provide moisture-proof floors;
- 5 - makes it possible to obviate the need of accurate, separate placement of an underlay before laying the floor panels; and
- considerably cuts the time for joining the panels.

10 These and other objects of the invention are achieved by means of a panel-joining system having the features recited in the appended claims.

Thus, the invention provides a system for making a joint along adjacent joint edges of two building panels, especially floor panels, in which joint:

15 the adjacent joint edges together form a first mechanical connection locking the joint edges to each other in a first direction at right angles to the principal plane of the panels, and

20 a locking device arranged on the rear side of the panels forms a second mechanical connection locking the panels to each other in a second direction parallel to the principal plane and at right angles to the joint edges, said locking device comprising a locking groove which extends parallel to and spaced from the joint edge  
25 of one of said panels, termed groove panel, and which is open at the rear side of the groove panel, said system being characterised in

that the locking device further comprises a strip integrated with the other of said panels, termed strip  
30 panel, said strip extending throughout substantially the entire length of the joint edge of the strip panel and being provided with a locking element projecting from the strip, such that when the panels are joined together, the strip projects on the rear side of the groove panel with  
35 its locking element received in the locking groove of the groove panel,

that the panels, when joined together, can occupy a relative position in said second direction where a play exists between the locking groove and a locking surface on the locking element that is facing the joint edges and is operative in said second mechanical connection,

that the first and the second mechanical connection both allow mutual displacement of the panels in the direction of the joint edges, and

that the second mechanical connection is so conceived as to allow the locking element to leave the locking groove if the groove panel is turned about its joint edge angularly away from the strip.

The term "rear side" as used above should be considered to comprise any side of the panel located behind/ underneath the front side of the panel. The opening plane of the locking groove of the groove panel can thus be located at a distance from the rear surface of the panel resting on the supporting structure. Moreover, the strip, which in the invention extends throughout substantially the entire length of the joint edge of the strip panel, should be considered to encompass both the case where the strip is a continuous, uninterrupted element, and the case where the "strip" consists in its longitudinal direction of several parts, together covering the main portion of the joint edge.

It should also be noted (i) that it is the first and the second mechanical connection as such that permit mutual displacement of the panels in the direction of the joint edges, and that (ii) it is the second mechanical connection as such that permits the locking element to leave the locking groove if the groove panel is turned about its joint edge angularly away from the strip. Within the scope of the invention, there may thus exist means, such as glue and mechanical devices, that can counteract or prevent such displacement and/or upward angling.

The system according to the invention makes it possible to provide concealed, precise locking of both the short and long sides of the panels in hard, thin floors. The floor panels can be quickly and conveniently dis-  
5 assembled in the reverse order of laying without any risk of damage to the panels, ensuring at the same time a high laying quality. The panels can be assembled and dis-  
assembled much faster than in present-day systems, and any damaged or worn-out panels can be replaced by taking  
10 up and re-laying parts of the floor.

According to an especially preferred embodiment of the invention, a system is provided which permits precise joining of thin floor panels having, for example, a thickness of the order of 3 mm and which at the same time  
15 provides a tolerance-independent smooth top face at the joint. To this end, the strip is mounted in an equalising groove which is countersunk in the rear side of the strip panel and which exhibits an exact, predetermined distance from its bottom to the front side of the strip panel. The  
20 part of the strip projecting behind the groove panel engages a corresponding equalising groove, which is countersunk in the rear side of the groove panel and which exhibits the same exact, predetermined distance from its bottom to the front side of the groove panel.  
25 The thickness of the strip then is at least so great that the rear side of the strip is flush with, and preferably projects slightly below the rear side of the panels. In this embodiment, the panels will always rest, in the joint, with their equalising grooves on a strip. This  
30 levels out the tolerance and imparts the necessary strength to the joint. The strip transmits horizontal and upwardly-directed forces to the panels and downwardly-directed forces to the existing subfloor.

Preferably, the strip may consist of a material  
35 which is flexible, resilient and strong, and can be sawn. A preferred strip material is sheet aluminium. In an alu-

minium strip, sufficient strength can be achieved with a strip thickness of the order of 0.5 mm.

In order to permit taking up previously laid, joined floor panels in a simple way, a preferred embodiment of the invention is characterised in that when the groove panel is pressed against the strip panel in the second direction and is turned angularly away from the strip, the maximum distance between the axis of rotation of the groove panel and the locking surface of the locking groove closest to the joint edges is such that the locking element can leave the locking groove without contacting the locking surface of the locking groove. Such a disassembly can be achieved even if the aforementioned play between the locking groove and the locking surface is not greater than 0.2 mm.

According to the invention, the locking surface of the locking element is able to provide a sufficient locking function even with very small heights of the locking surface. Efficient locking of 3-mm floor panels can be achieved with a locking surface that is as low as 2 mm. Even a 0.5-mm-high locking surface may provide sufficient locking. The term "locking surface" as used herein relates to the part of the locking element engaging the locking groove to form the second mechanical connection.

For optimal function of the invention, the strip and the locking element should be formed on the strip panel with high precision. Especially, the locking surface of the locking element should be located at an exact distance from the joint edge of the strip panel.

Furthermore, the extent of the engagement in the floor panels should be minimised, since it reduces the floor strength.

By known manufacturing methods, it is possible to produce a strip with a locking pin, for example by extruding aluminium or plastics into a suitable section, which is thereafter glued to the floor panel or is inserted in special grooves. These and all other tradi-



tional methods do however not ensure optimum function and an optimum level of economy. To produce the joint system according to the invention, the strip is suitably formed from sheet aluminium, and is mechanically fixed to the strip panel.

The laying of the panels can be performed by first placing the strip panel on the subfloor and then moving the groove panel with its long side up to the long side of the strip panel, at an angle between the principal plane of the groove panel and the subfloor. When the joint edges have been brought into engagement with each other to form the first mechanical connection, the groove panel is angled down so as to accommodate the locking element in the locking groove.

METHOD  
ANGLE

Laying can also be performed by first placing both the strip panel and the groove panel flat on the subfloor and then joining the panels parallel to their principal planes while bending the strip downwards until the locking element snaps up into the locking groove. This laying technique enables in particular mechanical locking of both the short and long sides of the floor panels. For example, the long sides can be joined together by using the first laying technique with downward angling of the groove panel, while the short sides are subsequently joined together by displacing the groove panel in its longitudinal direction until its short side is pressed on and locked to the short side of an adjacent panel in the same row.

strip  
groove

In connection with their manufacture, the floor panels can be provided with an underlay of e.g. floor board, foam or felt. The underlay should preferably cover the strip such that the joint between the underlays is offset in relation to the joint between the floor panels.

underlay

The above and other features and advantages of the invention will appear from the appended claims and the following description of embodiments of the invention.

The invention will now be described in more detail hereinbelow with reference to the accompanying drawing Figures.

#### Description of Drawing Figures

5 Figs 1a and 1b schematically show in two stages how two floor panels of different thickness are joined together in floating fashion according to a first embodiment of the invention.

Figs 2a-c show in three stages a method for mechanically joining two floor panels according to a second embodiment of the invention.

Figs 3a-c show in three stages another method for mechanically joining the floor panels of Figs 2a-c.

15 Figs 4a and 4b show a floor panel according to Figs 2a-c as seen from below and from above, respectively.

Fig. 5 illustrates in perspective a method for laying and joining floor panels according to a third embodiment of the invention.

20 Fig. 6 shows in perspective and from below a first variant for mounting a strip on a floor panel.

Fig. 7 shows in section a second variant for mounting a strip on a floor panel.

#### Description of Preferred Embodiments

25 Figs 1a and 1b, to which reference is now made, illustrate a first floor panel 1, hereinafter termed strip panel, and a second floor panel 2, hereinafter termed groove panel. The terms "strip panel" and "groove panel" are merely intended to facilitate the description of the invention, the panels 1, 2 normally being identical in practice. The panels 1 and 2 may be made from compact  
30 laminate and may have a thickness of about 3 mm with a thickness tolerance of about  $\pm 0.2$  mm. Considering this thickness tolerance, the panels 1, 2 are illustrated with different thicknesses (Fig. 1b), the strip panel 1 having

a maximum thickness (3.2 mm) and the groove panel 2 having a minimum thickness (2.8 mm).

To enable mechanical joining of the panels 1, 2 at opposing joint edges, generally designated 3 and 4, respectively, the panels are provided with grooves and strips as described in the following.

Reference is now made primarily to Figs 1a and 1b, and secondly to Figs 4a and 4b showing the basic design of the floor panels from below and from above, respectively.

From the joint edge 3 of the strip panel 1, i.e. the one long side, projects horizontally a flat strip 6 mounted at the factory on the underside of the strip panel 1 and extending throughout the entire joint edge 3. The strip 6, which is made of flexible, resilient sheet aluminium, can be fixed mechanically, by means of glue or in any other suitable way. In Figs 1a and 1b, the strip 6 is glued, while in Figs 4a and 4b it is mounted by means of a mechanical connection, which will be described in more detail hereinbelow.

Other strip materials can be used, such as sheets of other metals, as well as aluminium or plastics sections. Alternatively, the strip 6 may be integrally formed with the strip panel 1. At any rate, the strip 6 should be integrated with the strip panel 1, i.e. it should not be mounted on the strip panel 1 in connection with laying. As a non-restrictive example, the strip 6 may have a width of about 30 mm and a thickness of about 0.5 mm.

As appears from Figs 4a and 4b, a similar, although shorter strip 6' is provided also at one short side 3' of the strip panel 1. The shorter strip 6' does however not extend throughout the entire short side 3' but is otherwise identical with the strip 6 and, therefore, is not described in more detail here.

The edge of the strip 6 facing away from the joint edge 3 is formed with a locking element 8 extended throughout the entire strip 6. The locking element 8 has

a locking surface 10 facing the joint edge 3 and having a height of e.g. 0.5 mm. The locking element 8 is so designed that when the floor is being laid and the strip panel 2 of Fig. 1a is pressed with its joint edge 4

5 against the joint edge 3 of the strip panel 1 and is angled down against the subfloor 12 according to Fig. 1b, it enters a locking groove 14 formed in the underside 16 of the groove panel 2 and extending parallel to and spaced from the joint edge 4. In Fig. 1b, the locking element

10 8 and the locking groove 14 together form a mechanical connection locking the panels 1, 2 to each other in the direction designated D2. More specifically, the locking surface 10 of the locking element 8 serves as a stop with respect to the surface of the locking groove 14 closest

15 to the joint edge 4.

When the panels 1 and 2 are joined together, they can however occupy such a relative position in the direction D2 that there is a small play  $\Delta$  between the locking surface 10 and the locking groove 14. This mechanical

20 connection in the direction D2 allows mutual displacement of the panels 1, 2 in the direction of the joint, which considerably facilitates the laying and enables joining together the short sides by snap action.

PLAY

As appears from Figs 4a and 4b, each panel in the

25 system has a strip 6 at one long side 3 and a locking groove 14 at the other long side 4, as well as a strip 6' at one short side 3' and a locking groove 14' at the other short side 4'.

Furthermore, the joint edge 3 of the strip panel 1

30 has in its underside 18 a recess 20 extending throughout the entire joint edge 3 and forming together with the upper face 22 of the strip 6 a laterally open recess 24. The joint edge 4 of the groove panel 2 has in its top side 26 a corresponding recess 28 forming a locking

35 tongue 30 to be accommodated in the recess 24 so as to form a mechanical connection locking the joint edges 3, 4 to each other in the direction designated D1. This con-

nection can be achieved with other designs of the joint edges 3, 4, for example by a bevel thereof such that the joint edge 4 of the groove panel 2 passes obliquely in underneath the joint edge 3 of the strip panel 1 to be  
 5 locked between that edge and the strip 6.

The panels 1, 2 can be taken up in the reverse order of laying without causing any damage to the joint, and be laid again.

The strip 6 is mounted in a tolerance-equalising  
 10 groove 40 in the underside 18 of the strip panel 1 adjacent the joint edge 3. In this embodiment, the width of the equalising groove 40 is approximately equal to half the width of the strip 6, i.e. about 15 mm. By means of the equalising groove 40, it is ensured that there will  
 15 always exist between the top side 21 of the panel 1 and the bottom of the groove 40 an exact, predetermined distance E which is slightly smaller than the minimum thickness (2.8 mm) of the floor panels 1, 2. The groove panel 2 has a corresponding tolerance-equalising surface or  
 20 groove 42 in the underside 16 of the joint edge 4. The distance between the equalising surface 42 and the top side 26 of the groove panel 2 is equal to the aforementioned exact distance E. Further, the thickness of the strip 6 is so chosen that the underside 44 of the strip  
 25 is situated slightly below the undersides 18 and 16 of the floor panels 1 and 2, respectively. In this manner, the entire joint will rest on the strip 6, and all vertical downwardly-directed forces will be efficiently transmitted to the subfloor 12 without any stresses being  
 30 exerted on the joint edges 3, 4. Thanks to the provision of the equalising grooves 40, 42, an entirely even joint will be achieved on the top side, despite the thickness tolerances of the panels 1, 2, without having to perform any grinding or the like across the whole panels.  
 35 Especially, this obviates the risk of damage to the bottom layer of the compact laminate, which might give rise to bulging of the panels.

*equalising groove*

Reference is now made to the embodiment of Figs 2a-c showing in a succession substantially the same laying method as in Figs 1a and 1b. The embodiment of Figs 2a-c primarily differs from the embodiment of Figs 1a and 1b in that the strip 6 is mounted on the strip panel 1 by means of a mechanical connection instead of glue. To provide this mechanical connection, illustrated in more detail in Fig. 6, a groove 50 is provided in the underside 18 of the strip panel 1 at a distance from the recess 24.

10 The groove 50 may be formed either as a continuous groove extending throughout the entire length of the panel 1, or as a number of separate grooves. The groove 50 defines, together with the recess 24, a dovetail gripping edge 52, the underside of which exhibits an exact equalising

15 distance E to the top side 21 of the strip panel 1. The aluminium strip 6 has a number of punched and bent tongues 54, as well as one or more lips 56 which are bent round opposite sides of the gripping edge 52 in clamping engagement therewith. This connection is shown in detail

20 from below in the perspective view of Fig. 6.

Alternatively, a mechanical connection between the strip 6 and the strip panel 1 can be provided as illustrated in Fig. 7 showing in section a cut-away part of the strip panel 1 turned upside down. In Fig. 7, the mechanical connection comprises a dovetail recess 58 in the

25 underside 18 of the strip panel 1, as well as tongues/lips 60 punched and bent from the strip 6 and clamping against opposing inner sides of the recess 58.

The embodiment of Figs 2a-c is further characterised

30 in that the locking element 8 of the strip 6 is designed as a component bent from the aluminium sheet and having an operative locking surface 10 extending at right angles up from the front side 22 of the strip 6 through a height of e.g. 0.5 mm, and a rounded guide surface 34 facilitating the insertion of the locking element 8 into the locking groove 14 when angling down the groove panel 2 towards the subfloor 12 (Fig. 2b), as well as a portion 36

which is inclined towards the subfloor 12 and which is not operative in the laying method illustrated in Figs 2a-c.

Further, it can be seen from Figs 2a-c that the joint edge 3 of the strip panel 1 has a lower bevel 70 which cooperates during laying with a corresponding upper bevel 72 of the joint edge 4 of the groove panel 2, such that the panels 1 and 2 are forced to move vertically towards each other when their joint edges 3, 4 are moved up to each other and the panels are pressed together horizontally.

Preferably, the locking surface 10 is so located relative to the joint edge 3 that when the groove panel 2, starting from the joined position in Fig. 2c, is pressed horizontally in the direction D2 against the strip panel 1 and is turned angularly up from the strip 6, the maximum distance between the axis of rotation A of the groove panel 2 and the locking surface 10 of the locking groove is such that the locking element 8 can leave the locking groove 14 without coming into contact with it.

Figs 3a-3b show another joining method for mechanically joining together the floor panels of Figs 2a-c. The method illustrated in Figs 3a-c relies on the fact that the strip 6 is resilient and is especially useful for joining together the short sides of floor panels which have already been joined along one long side as illustrated in Figs 2a-c. The method of Figs 3a-c is performed by first placing the two panels 1 and 2 flat on the subfloor 12 and then moving them horizontally towards each other according to Fig. 3b. The inclined portion 36 of the locking element 8 then serves as a guide surface which guides the joint edge 4 of the groove panel 2 up on to the upper side 22 of the strip 6. The strip 6 will then be urged downwards while the locking element 8 is sliding on the equalising surface 42. When the joint edges 3, 4 have been brought into complete engagement

with each other horizontally, the locking element 8 will snap into the locking groove 14 (Fig. 3c), thereby providing the same locking as in Fig. 2c. The same locking method can also be used by placing, in the initial position, the joint edge 4 of the groove panel with the equalising groove 42 on the locking element 10 (Fig. 3a). The inclined portion 36 of the locking element 10 then is not operative. This technique thus makes it possible to lock the floor panels mechanically in all directions, and by repeating the laying operations the whole floor can be laid without using any glue.

The invention is not restricted to the preferred embodiments described above and illustrated in the drawings, but several variants and modifications thereof are conceivable within the scope of the appended claims. The strip 6 can be divided into small sections covering the major part of the joint length. Further, the thickness of the strip 6 may vary throughout its width. All strips, locking grooves, locking elements and recesses are so dimensioned as to enable laying the floor panels with flat top sides in a manner to rest on the strip 6 in the joint. If the floor panels consist of compact laminate and if silicone or any other sealing compound, a rubber strip or any other sealing device is applied prior to laying between the flat projecting part of the strip 6 and the groove panel 2 and/or in the recess 26, a moisture-proof floor is obtained.

As appears from Fig. 6, an underlay 46, e.g. of floor board, foam or felt, can be mounted on the underside of the panels during the manufacture thereof. In one embodiment, the underlay 46 covers the strip 6 up to the locking element 8, such that the joint between the underlays 46 becomes offset in relation to the joint between the joint edges 3 and 4.

In the embodiment of Fig. 5, the strip 6 and its locking element 8 are integrally formed with the strip panel 1, the projecting part of the strip 6 thus forming



an extension of the lower part of the joint edge 3. The locking function is the same as in the embodiments described above. On the underside 18 of the strip panel 1, there is provided a separate strip, band or the like 74  
 5 extending throughout the entire length of the joint and having, in this embodiment, a width covering approximately the same surface as the separate strip 6 of the previous embodiments. The strip 74 can be provided directly on the rear side 18 or in a recess formed therein  
 10 (not shown), so that the distance from the front side 21, 26 of the floor to the rear side 76, including the thickness of the strip 74, always is at least equal to the corresponding distance in the panel having the greatest thickness tolerance. The panels 1, 2 will then rest, in  
 15 the joint, on the strip 74 or only on the undersides 18, 16 of the panels, if these sides are made plane.

When using a material which does not permit downward bending of the strip 6 or the locking element 8, laying can be performed in the way shown in Fig. 5. A floor  
 20 panel 2a is moved angled upwardly with its long side 4a into engagement with the long side 3 of a previously laid floor panel 1 while at the same time a third floor panel 2b is moved with its short side 4b' into engagement with the short side 3a' of the upwardly-angled floor panel 2a  
 25 and is fastened by angling the panel 2b downwards. The panel 2b is then pushed along the short side 3a' of the upwardly-angled floor panel 2a until its long side 4b encounters the long side 3 of the initially-laid panel 1. The two upwardly-angled panels 2a and 2b are therefore  
 30 angled down on to the subfloor 12 so as to bring about locking.

By a reverse procedure the panels can be taken up in the reverse order of laying without causing any damage to the joint, and be laid again.

35 Several variants of preferred laying methods are conceivable. For example, the strip panel can be inserted under the groove panel, thus enabling the laying of pan-

els in all four directions with respect to the initial position.

## CLAIMS

1. A method for laying and mechanically joining rectangular building panels in parallel rows, especially floor panels, said panels being provided with means for mechanically locking together their long edges as well as their short edges in a first direction (D1) at right angles to the principal plane of the panels, characterised in that each panel, at a rear side thereof, being provided with (i) a locking strip at one long edge and at one short edge, each locking strip being integrated with the panel as a separate element connected to the panel or as an extension of a lower part of the joint edge and extending throughout substantially the entire length of the corresponding edge and being provided with a projecting locking element, and (ii) a locking groove at an opposite long edge and at an opposite short edge, each locking groove extending parallel to and spaced from the corresponding edge and being open at a rear side of the panel; and in that said method includes the following two main locking steps S1 and S2 for laying a new panel:
- S1: mechanically connecting a long edge of the new panel to a long edge of a previously laid first panel in a first row in such a way that the new panel and the first panel, as a result of said first main locking step S1, are mechanically locked to each other in said first direction (D1) as well as in a second direction (D2) parallel to said principal plane and at right angles to the locked long edges, wherein said first main locking step S1 to this end includes the substep of placing the new panel in a second row adjacent to said first row with the long edge of the new panel provided with a locking groove being placed upon and in contact with a locking strip at the adjacent long edge of the first panel, while holding the new panel at an angle relative to a principal

plane of the first panel and at a distance from its final longitudinal position relative to a previously laid second panel in said second row, and the substep of subsequently angling down the new panel so as to accommodate the locking element of said strip of the first panel in said locking groove of the new panel, and,

S2: mechanically connecting a short edge of the new panel to a short edge of said previously laid second panel in the second row in such a way that the new panel and the second panel, as a result of said second main locking step, are mechanically locked to each other at said short edges in said first direction (D1) as well as in a second direction (D2) parallel to said principal plane and at right angles to the short edges, wherein said second main locking step S2 is performed by a linear displacement of the new panel in its longitudinal direction relative to the first panel towards said final longitudinal position until the locking element of the strip at one of the short edges is received in the locking groove at the other one of the short edges, whereby the new panel, in its final laid position, is mechanically connected in two direction (D1, D2) at its long edge to the first panel and at its short edge to the second panel.

2. A method for laying and mechanically joining rectangular building panels in parallel rows, especially floor panels, said panels being provided with means for mechanically locking together their long edges as well as their short edges in a first direction (D1) at right angles to the principal plane of the panels, characterised in that each panel, at a rear side thereof, being provided with (i) a locking strip at one long edge and at one short edge, each locking strip being integrated with the panel as a separate element connected to the panel or as an extension of a lower part

of the joint edge and extending throughout substantially the entire length of the corresponding edge and being provided with a projecting locking element, and (ii) a locking groove at an opposite long edge and at an opposite short edge, each locking groove extending parallel to and spaced from the corresponding edge and being open at a rear side of the panel; and in that said method includes the following two main locking steps S1 and S2 for laying a new panel:

10 S1: mechanically connecting a long edge of the new panel to a long edge of a previously laid first panel in a first row in such a way that the new panel and the first panel, as a result of said first main locking step S1, are mechanically locked to each other in  
15 said first direction (D1) as well as in a second direction (D2) parallel to said principal plane and at right angles to the locked long edges, wherein said first main locking step S1 to this end includes the substep of placing the new panel in a second row adjacent to said first row with the locking strip  
20 being provided at a long edge of the new panel being inserted under the adjacent long edge of the first panel being provided with a locking groove, while holding the new panel at an angle relative to a principal plane of the first panel and at a distance  
25 from its final longitudinal position relative to a previously laid second panel in said second row, and the substep of subsequently angling down the new panel so as to accommodate the locking element of  
30 said strip of the new panel in said locking groove of the first panel,

and,

S2: mechanically connecting a short edge of the new panel to a short edge of said previously laid second panel  
35 in the second row in such a way that the new panel and the second panel, as a result of said second main locking step, are mechanically locked to each other

at said short edges in said first direction (D1) as well as in a second direction (D2) parallel to said principal plane and at right angles to the short edges, wherein said second main locking step S2 is  
5 performed by a linear displacement of the new panel in its longitudinal direction relative to the first panel towards said final longitudinal position until the locking element of the strip at one of the short edges is received in the locking groove at the other  
10 one of the short edges, whereby the new panel, in its final laid position, is mechanically connected in two direction (D1, D2) at its long edge to the first panel and at its short edge to the second panel.

15 3. A method as claimed in claim 1 or 2, wherein, as a result of said linear displacement of the new panel, the locking strip located at the short edges to be locked together is bent downwards until the locking element  
20 snaps up into the locking groove.

4. A method for producing a floor as claimed in any one of claims 1-3, wherein the short edge of the new  
25 panel to be locked to the short edge of the second panel presents a locking groove for engagement with a locking element of the second panel.

5. A method as claimed in claim 4, wherein the new panel is angled down into a position where the end  
30 portion of the new panel facing the second panel is placed upon and in contact with the locking strip at the short edge of the second panel.

6. A method as claimed in any one of claims 1-3, wherein the short edge of the new panel to be locked to  
35 the short edge of the second panel presents a locking strip with a locking element for engagement with a locking groove of the second panel.

7. A method as claimed in any one of claims 1-6, wherein said substep of angling down the new panel is performed while holding an upper corner part of the long edge of the new panel in contact with an upper corner part of the long edge of the first panel.

8. A method according to any one of claims 1-7, wherein the new panel, after having been laid and mechanically joined to the first and to the second panel, can be taken up by angling the new panel and the second panel together upwards in relation to the first panel and subsequently loosening the new panel from the second panel by angling and/or linear displacing the new panel in relation to the second panel.

9. A method as claimed in claim 8, wherein said step of angling the new panel and the second panel together in relation to the first panel can be performed while holding an upper corner part of the long edge of the new panel in contact with an upper corner part of the long edge of the first panel.

10. A method for producing a floor, comprising the step of manufacturing a plurality of rectangular floor panels provided with means for mechanically locking together their long edges as well as their short edges in a first direction (D1) at right angles to the principal plane of the panels, characterised by the step of providing each panel, during the manufacturing and at the rear side of the panel, with (i) a locking strip at one long edge and at one short edge, each locking strip being integrated with the panel as a separate element connected to the panel or as an extension of a lower part of the joint edge and extending throughout substantially the entire length of the corresponding edge and being provided with a projecting locking element, and (ii) a locking groove at an opposite long edge and at an

opposite short edge, each locking groove extending parallel to and spaced from the corresponding edge and being open at a rear side of the panel,

wherein said integrated strips, said grooves and  
 5 said locking elements are provided in such a way during the manufacturing that:

(i) when two adjacent panels have been mechanically joined together along adjacent edges thereof, a strip of one of the panels projects on the rear side of the other  
 10 panel with the locking element of said strip being received in a locking groove of the other panel, thereby locking the two panels to each other also in a second direction (D2) parallel to said principal plane and at right angles to the joined edges; and

15 (ii) the following laying steps 1-3 can be performed for producing the floor when a new panel is laid and mechanically connected to a long edge of a previously laid first panel in a first row as well as to a short edge of a previously laid second panel in an adjacent second row, said  
 20 first and second panels being already mechanically connected to each other at adjacent long edges thereof:

1. placing the new panel in the second row, while holding the new panel at an angle relative to a principal plane of the first panel, such that the new panel is  
 25 spaced from its final longitudinal position relative to said second panel and such that the long edge of the new panel provided with a locking groove is placed upon and in contact with a locking strip at the adjacent long edge of the first panel,
- 30 2. subsequently angling down the new panel so as to accommodate the locking element of said strip of the first panel in said locking groove of the new panel, whereby the new panel and the first panel are mechanically connected with each other in said second  
 35 direction (D2) with respect to the thus-connected long edges, wherein said long edges, in the thus angled-down position of the new panel, being in engage-



ment with each other and thereby mechanically locked together in said first direction (D1) also, and finally

3. displacing the new panel in its longitudinal direction relative to the first panel towards said final longitudinal position until the locking element of one of the short edges snaps up into the locking groove of the other one of the short edges, whereby the new panel and the second panel are mechanically connected with each other in both in said first direction (D1) and in said second direction (D2) with respect to the thus-connected short edges.

11. A method for producing a floor, comprising the step of manufacturing a plurality of rectangular floor panels provided with means for mechanically locking together their long edges as well as their short edges in a first direction (D1) at right angles to the principal plane of the panels, characterised by the step of providing each panel, during the manufacturing and at the rear side of the panel, with (i) a locking strip at one long edge and at one short edge, each locking strip being integrated with the panel as a separate element connected to the panel or as an extension of a lower part of the joint edge and extending throughout substantially the entire length of the corresponding edge and being provided with a projecting locking element, and (ii) a locking groove at an opposite long edge and at an opposite short edge, each locking groove extending parallel to and spaced from the corresponding edge and being open at a rear side of the panel,

wherein said integrated strips, said grooves and said locking elements are provided during the manufacturing in such a way that:

- (i) when two adjacent panels have been mechanically joined together along adjacent edges thereof, a strip of one of the panels projects on the rear side of the other

panel with the locking element of said strip being received in a locking groove of the other panel, thereby locking the two panels to each other also in a second direction (D2) parallel to said principal plane and at right angles to the joined edges; and

(ii) the following laying steps 1-3 can be performed for producing the floor when a new panel is laid and mechanically connected to a long edge of a previously laid first panel in a first row as well as to a short edge of a previously laid second panel in an adjacent second row, said first and second panels being already mechanically connected to each other at adjacent long edges thereof:

1. placing the new panel in the second row, while holding the new panel at an angle relative to a principal plane of the first panel, such that the new panel is spaced from its final longitudinal position relative to said second panel and such that a locking strip provided at a long edge of the new panel is inserted under the adjacent long edge of the first panel being provided with a locking groove,
2. subsequently angling down the new panel so as to accommodate the locking element of said strip of the new panel in said locking groove of the first panel, whereby the new panel and the first panel are mechanically connected with each other in said second direction (D2) with respect to the thus-connected long edges, wherein said long edges, in the thus angled-down position of the new panel, being in engagement with each other and thereby mechanically locked together in said first direction (D1) also, and finally
3. displacing the new panel in its longitudinal direction relative to the first panel towards said final longitudinal position until the locking element of one of the short edges snaps up into the locking groove of the other one of the short edges, whereby the new panel and the second panel are mechanically

connected with each other in both in said first direction (D1) and in said second direction (D2) with respect to the thus-connected short edges.

5        12. A method for producing a floor as claimed in claim 10 or 11, wherein the locking strip located at the short edges to be locked together is provided in such a way that it is bent downwards as a result of displacing the new panel, until the locking element snaps up into  
10       the locking groove.

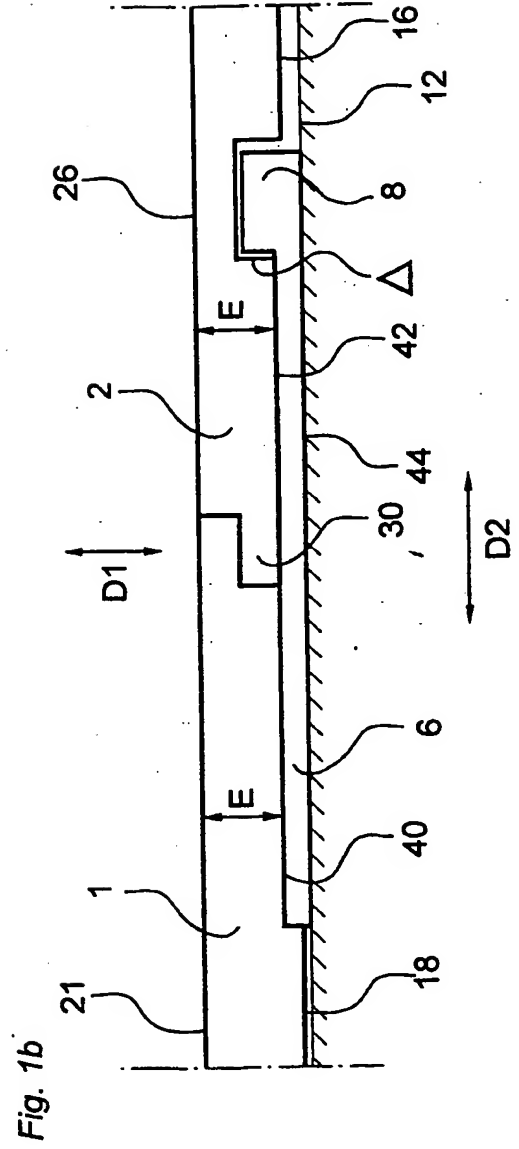
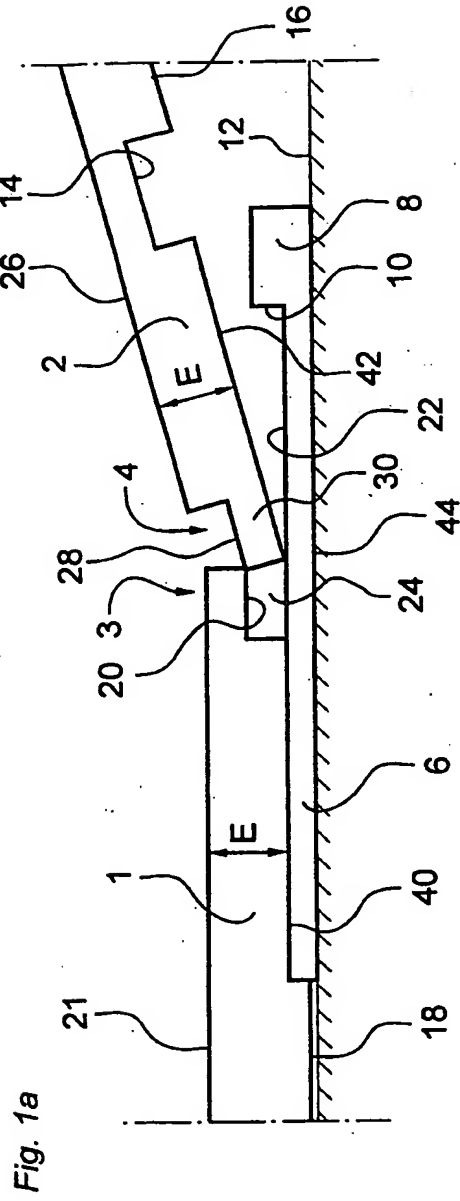
13. A method for producing a floor as claimed in any one of claim 10-12, wherein the short edge of the new panel to be locked to the short edge of the second panel  
15       presents a locking groove for engagement with a locking element of the second panel.

14. A method for producing a floor as claimed in claim 13, wherein the new panel is angled down into a  
20       position where the end portion of the new panel facing the second panel is placed upon and in contact with the locking strip at the short edge of the second panel.

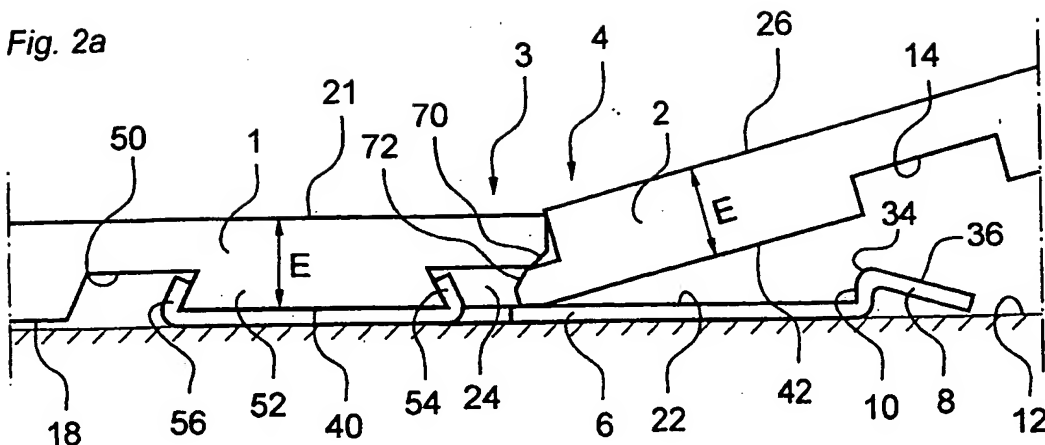
15. A method for producing a floor as claimed in any  
25       one of claims 10-12, wherein the short edge of the new panel to be locked to the short edge of the second panel presents a locking strip with a locking element for engagement with a locking groove of the second panel.

## ABSTRACT

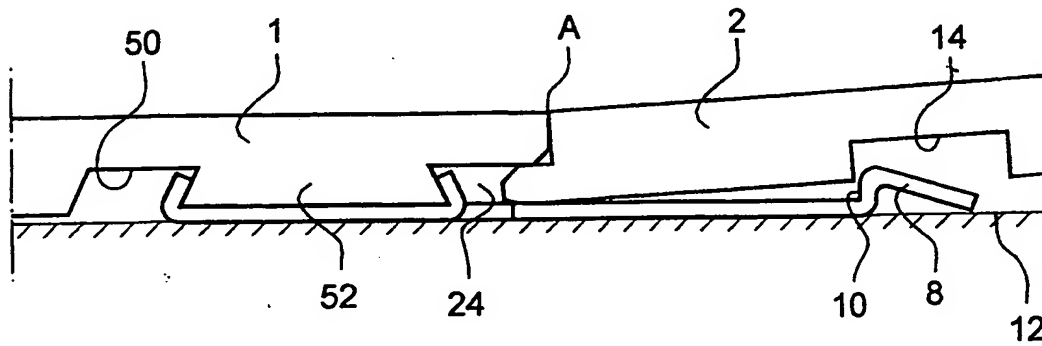
The invention relates to a system for laying and mechanically joining building panels, especially thin, hard, floating floors. Adjacent joint edges (3, 4) of two panels (1, 2) engage each other to provide a first mechanical connection locking the joint edges (3, 4) in a first direction (D1) perpendicular to the principal plane of the panels. In each joint, there is further provided a strip (6) which is integrated with one joint edge (3) and which projects behind the other joint edge (4). The strip (6) has an upwardly protruding locking element (8) engaging in a locking groove (14) in the rear side (16) of the other joint edge (4) to form a second mechanical connection locking the panels (1, 2) in a second direction (D2) parallel to the principal plane of the panels and at right angles to the joint. Both the first and the second mechanical connection allow mutual displacement of joined panels (1, 2) in the direction of the joint.



**Fig. 2a**



**Fig. 2b**



**Fig. 2c**

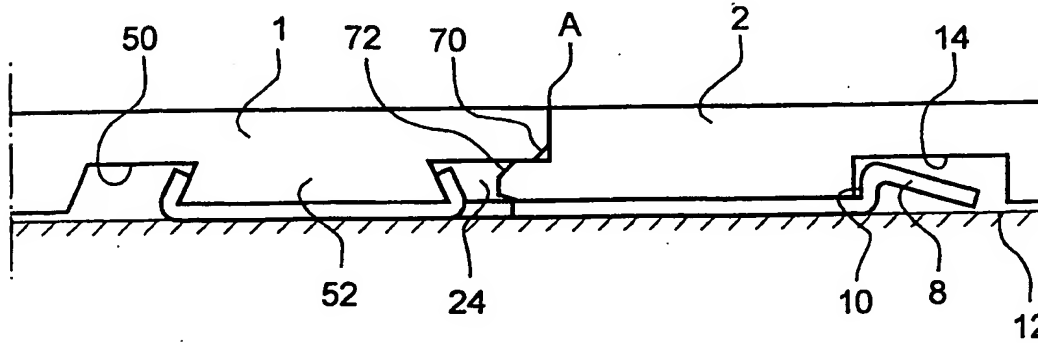


Fig. 3a

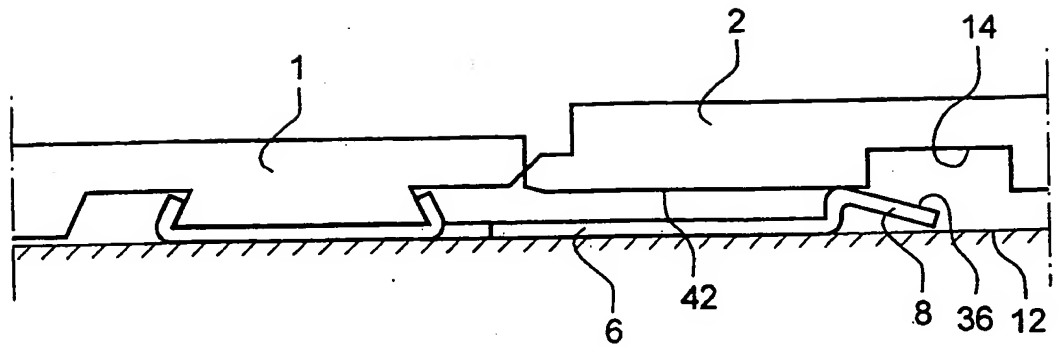


Fig. 3b

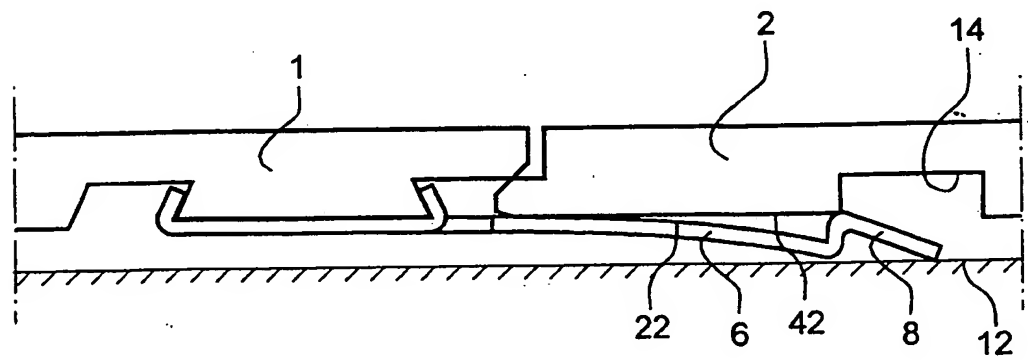


Fig. 3c

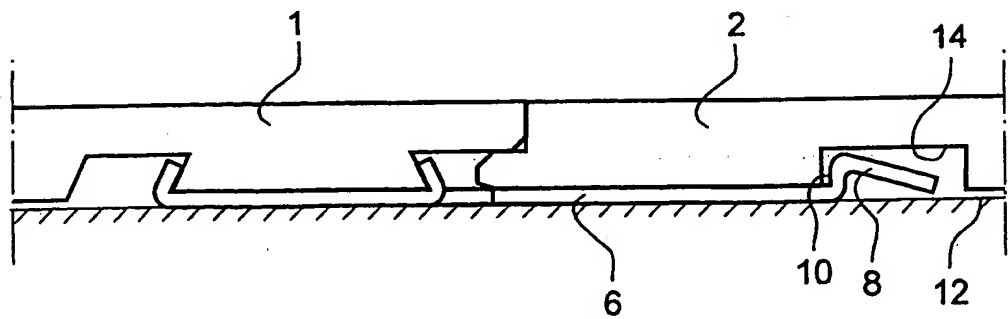


Fig. 4a

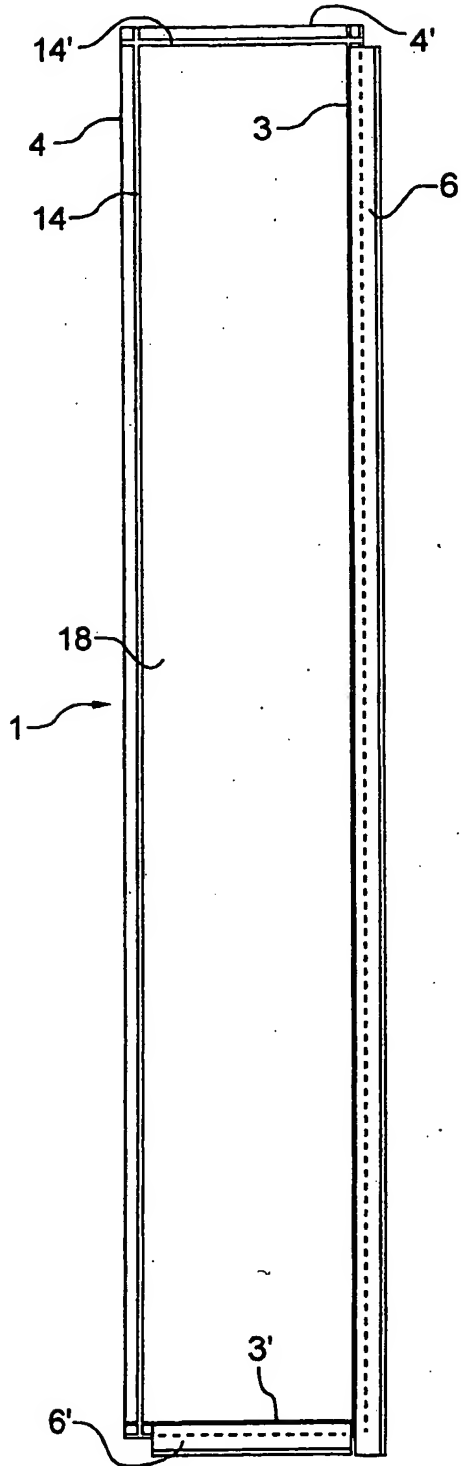


Fig. 4b

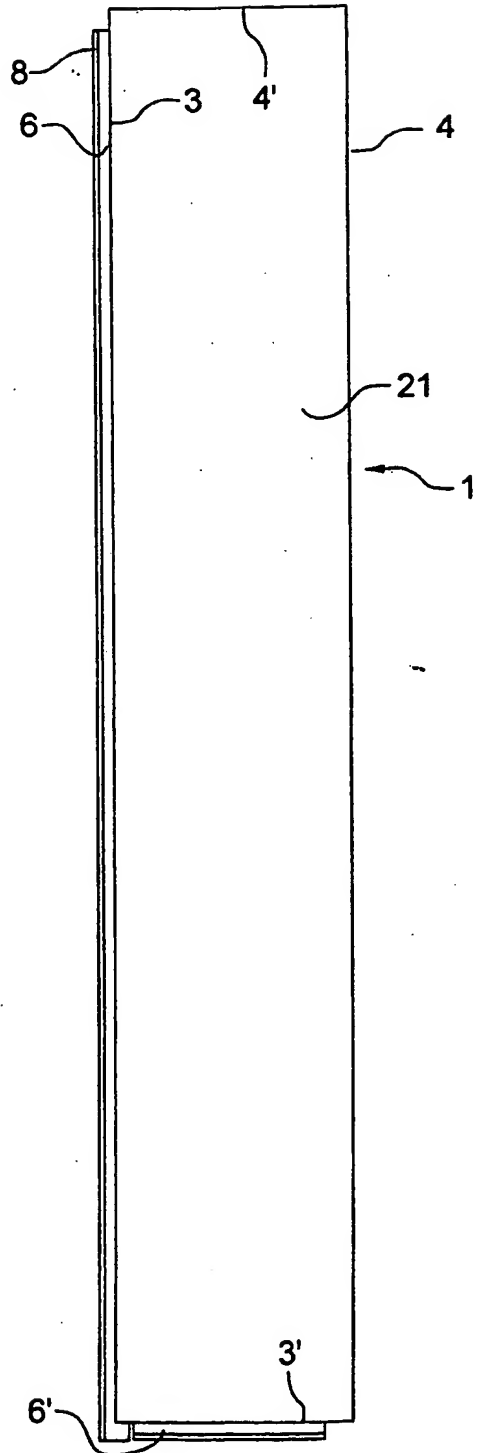
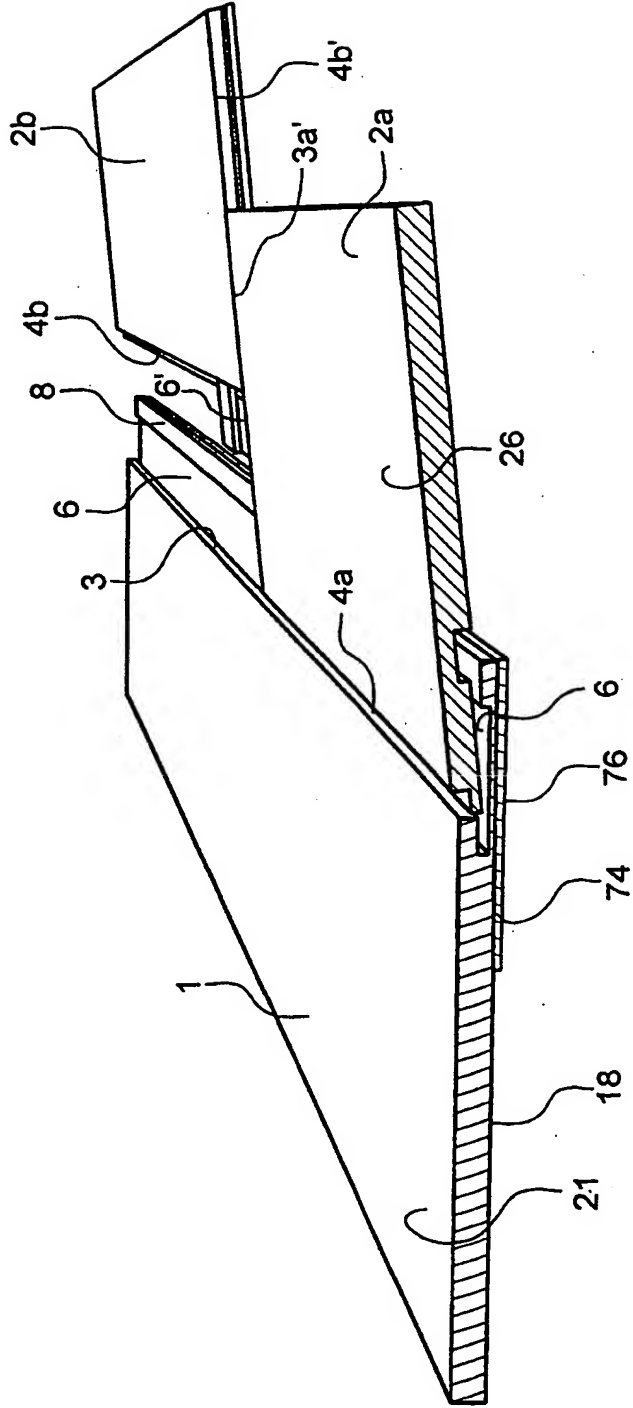
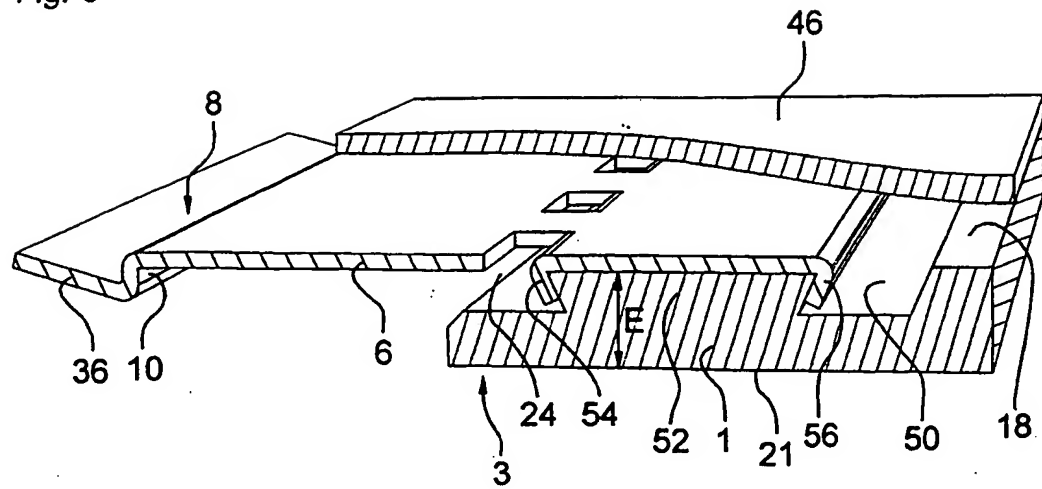




Fig. 5



**Fig. 6**



**Fig. 7**

